AN EVALUATION OF AN ENTERPRISE FRAMEWORK FOR PERFORMANCE IMPROVEMENT IN THE EMERGENCY DEPARTMENT OF A RURAL DISTRICT GENERAL HOSPITAL

Paul Turner

A thesis submitted in partial fulfilment of the requirements of the University of Lincoln for the degree of Doctor of Philosophy

April 2016

Abstract

An Enterprise Culture, which looks to replicate improvements to quality and efficiency demonstrated in the private sector, has evolved from health care policy in the English NHS. The aims of this research were to explore the theory underpinning the application of the policy and to challenge and test if the Enterprise Culture has provided a framework for performance improvement in a rural District General Hospital (DGH).

The evolution and characteristics of the Enterprise Culture resulting from the convergence of political policy relating to health care revealed a centralised command and control approach to performance expectations and a decentralised means of achieving them through managers and competitive markets. Using a mixed methodology with a dominant quantitative, less dominant qualitative emphasis, this research examined the theory through a critical comparison of the Enterprise Culture present in a single case study of a rural DGH with the Purpose, Process, People (PPP) framework which has led to private sector success.

Firstly, the study looked to understand the nature of the central Enterprise Culture target for hospital emergency care: that patients spend less than four hours in the Emergency Department. A quantitative analysis of service demand from patients found that attendance patterns offered opportunity to use PPP techniques to meet the four hour target, but that greater data availability would be necessary to make detailed calculations. A quantitative analysis of the resources provided revealed that capacity was not calculated, planned or monitored to meet demand. Furthermore, an ethnographic study of the operational activities of the hospital's emergency care system uncovered a lack of defined process and competent actors, departmental barriers and reactionary decisions leading to poor performance against the four hour wait target.

Secondly, an intervention was introduced to examine the Enterprise Culture's ability to generate efficiency and quality improvements. The intervention (care plans and drug chart provision for patients who required clinical observation) addressed a need, specific to the case site and was identified and implemented by clinicians and managers within the hospital's emergency care system. Practical barriers to conducting research in rural a DGH were encountered during the intervention and its evaluation. The intervention

also revealed that although the Enterprise Culture enabled an improvement intervention to meet local needs, pressure from the central target and the competence of people enacting the process did not support its continued efficacy.

In conclusion, in my contributions to subject knowledge, I argue that the Enterprise Culture present in the case site does not support the policy aims for generating quality and efficiency. The central four hour target remains too influential and causes reactionary operational activities. Processes and staff competent in following them are not adequate to meet the demands placed on the service of the emergency care system studied. Finally, the whole emergency care system has a great influence on the Emergency Department's performance and should be considered when evaluating its performance and decisions about service structure.

Acknowledgements

I owe a great deal of thanks to many people for their support, wisdom and friendship which have contributed so much to my studies, particularly:

My ‘fabulous’ supervisors, Dr Ros Kane and Dr Christine Jackson, whose knowledge, experience, patience and kindness have transformed an enthusiastic engineer into a passionate researcher. Thank you so much for all you have done, and I am looking forward enormously to continuing to learn from you.

My loving family: especially my children, Eve and Dan, and my Mum, Maureen. You have inspired and helped me through everything.

The memory of my beloved Dad, Frank. You never saw any of this study, but your intelligence, incredible common sense, and pride in me has never faded and guides me as much as it always did.

Dr Maria Joyce, Andy and Emma Sutton, Andrew and Maria Pacey, Paul Reeve, Lynda Needham and Roger and Christine Brook – thank you for keeping me on track in the final year.

The caring and hardworking staff at the case site.

Contents

List of Figures

List of Tables

1 Introduction to the Thesis

1.1 Introduction and Background

Government policy for English health care has, since the late 1970s, converged towards a system which looks to reproduce the resource utilisation, quality and efficiency successes of high-achieving private organisations (Turner et al., 2013a). Wall and Owen term this use of policy the Enterprise Culture (2003, 113-125), which consists of two principal themes. Firstly, a centralised structure for setting measures of health care related performance (with a target level to be achieved at a health care Trust level) and the means to monitor them: the command and control structure.

To achieve these central aims, a second theme is the decentralised implementation of a management structure and a competitive market system. Under the Enterprise Culture, an increase in the number of NHS managers and decrease in clinician power was implemented (Baggott, 2007, 130-153). Many responsibilities that senior clinicians previously held (such as service provision and control of budgeted spend) were given to the new management structure. The decentralised market system of commissioning health care provision from within and outside the NHS was also developed to promote competition and value (Bevan and Robinson, 2005, 54).

In a government consultation in 2000, participants from the public and National Health Service (NHS) staff confirmed the time patients spend in an Emergency Department to be a critical aspect of hospital emergency care performance, because, they felt, lengths of stay were excessive and varied across the country. From this consultation, targets for emergency care were created by the Department of Health (DH) in the NHS Plan (Department of Health, 2000). The DH subsequently set its strategy to deliver its Emergency Department performance target under the first reforming emergency care paper (Department of Health, 2001). The target for English Emergency Departments was stated: “by 2004 no-one [is] to wait more than 4 hours in an A&E [sic] department from arrival to admission to a bed in the hospital, transfer elsewhere or discharge. The average length of waiting should fall to 75 minutes”.

A review of the aggregated national performance showed this target was achieved by 2005 (Alberti, 2007). However, performance is highly variable, and sustainment of the

improvements is unclear (Turner et al., 2013b). Data published in the Health Service Journal shows a six month period in 2012 – 2013 where the English NHS failed to meet the four hour wait target (Clover, 2013).

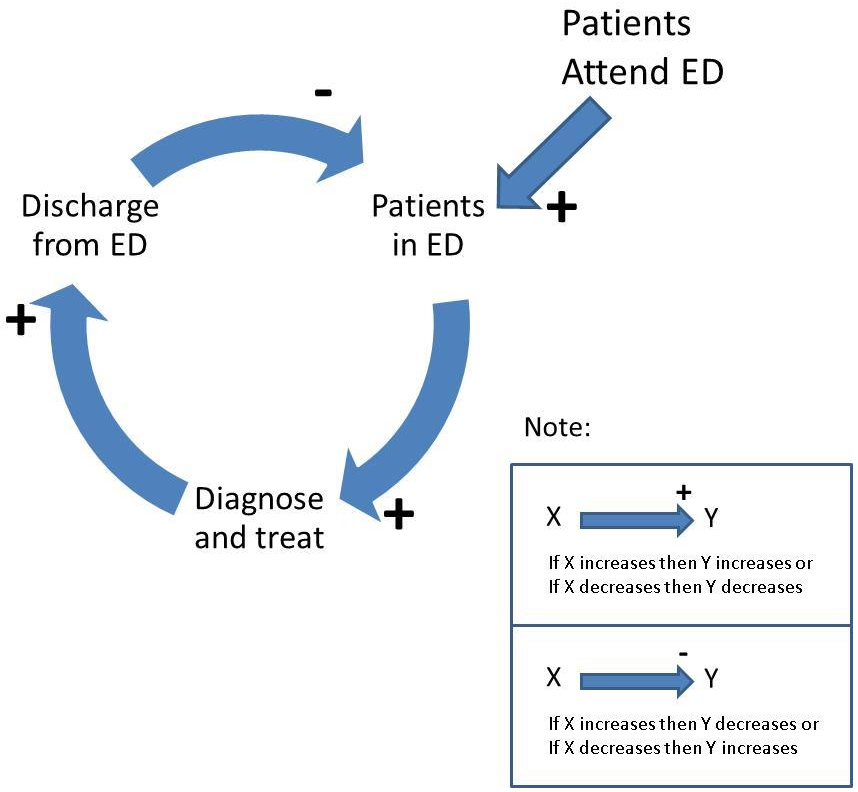
1.2 Rationale

This research and the subsequent thesis were developed from my involvement leading a project to improve waiting time performance in the Emergency Department of a District General Hospital (DGH) in rural district of England.

Ostensibly, the four hour target was a reflection of the performance of the Emergency Department; what the patients and users expected to experience when they presented to the department for emergency care. However, the government understood that achieving the expected Emergency Department performance was also influenced by other factors within the hospital system such as the time to complete diagnostic test results and enacting bed management procedures (Lammy, 2003, 112). Furthermore, as a performance improvement and statistical engineer with ten years' experience working in organisations using the methodologies underpinning the Enterprise Culture, I deemed the systemic view to be central to the successes of private sector in quality and efficiency. In emergency care, the system would be both within and beyond the hospital setting. The systemic view of creating performance efficiency seemed to be very different from the government approach of fragmenting the system and setting distinct performance expectations on a limited number of its components.

I created figure 1.1 to describe at a simplistic level the nature of the Emergency Department which requires that all factors which cause operational increases or decreases in the system should be considered. However, the improvement project measurement and scope assumed that only internal factors could be changed to reduce the time patients spent in Emergency Department. Although this may or may not be true, the assumptions and un-systemic approach conflicted with the practices I had taken from the private sector.

Figure 1.1 Emergency Department Causal Loop Diagram



Understanding the purpose of the Emergency Department waiting time target would direct the methods used in the improvement project. The Emergency Department waiting time measurement presented a dichotomy for the method to be used in the improvement project. In an improvement engineering project the measure typically forms part of a statement about the problem to be solved and is inextricably linked to the purpose. Was the purpose of the measure to indicate whether:

1. Patients spend excessive time in Emergency Department (as the NHS plan states)? Or

2. The emergency care system was functioning well (as argued by Lammy and inferred the DH development of the Enterprise Culture)?

1.3 Aims of the Research

These tensions inspired me to research the purpose of the waiting time target with academic rigour. I aimed to test whether the methods that I had successfully used in the private sector could achieve the same results in a rural NHS hospital: a pragmatic choice as I worked in a DGH in a rural area of the English East Midlands. I felt that it was important to add to the literature insights into:

1. Any limitations to achieving the Enterprise Culture four hour target?

2. What private sector best practice improvements are possible in an Emergency Department?

The study began with the general aim of understanding whether the DH four-hour target supported the needs of what an Emergency Department considered to be good service delivery within their part of the emergency care system. Following the literature review more specific aims emerged.

The rationale for the study was then amended to understand:

1. The dynamics, capacity and capability of the Emergency Department service; in particular how the presence of the Enterprise Culture affects Emergency Department performance.

2. The demand from emergency care service users who present to a rural Emergency Department. This includes assessing how much control the Emergency Department had over demand for its service and what alternative emergency care services exist. Demand characteristics, patient demographics and acuteness, and the stochastic nature of arrival patterns required scrutiny.

3. What capacity does the Emergency Department need in order to fulfil its role in providing an emergency care service? Identification of the gaps between the current Emergency Department system and the Purpose Process People (PPP) framework in order to realise the benefits identified in the literature review was also necessary. What characteristics of the Emergency Department system would need to be changed and could this be achieved?

1.4 Reflections on the Hybrid Role of Researcher / NHS Manager

At the time of conducting the research, I was employed as a manager in the trust with responsibility for the case site I studied, however I was not based at that hospital and my role was not within Emergency Care. I designed the study to ensure that my position was known openly to all potential participants who were approached to enroll in the research and actors within the case study site during my observations.

The biggest impact of the hybrid role was through the observations. Theoretically, the overt nature of my approach allowed me detailed observation of the complexities of the culture within the case site (Gerrish and Lacey, 2010) but raised an ethical challenge of reaction from the actors and changes in their behaviour because of my position as a manager.

In practice, when informing staff of my position and the aims of the research, staff gave no indication (through comments or signals that I was able to recognise, nor through feedback or escalation routes) that they considered my presence to be threatening. The four hour wait was seen generally as a beneficial because they believed patients should not be in the Emergency Department for longer periods. However during conversations with some clinical staff from the Emergency Department, it emerged that there was resentment at the interference of central targets and external pressure to meet them and an investigation was often welcomed, but not challenged. The nature of observing patient flow from a distance and not interfering with or investigating direct patient care was also deemed positive by two nurses who were recruited to the study.

Whilst present in the emergency care environment, it was quite easy to be discreet: I received no comments or requests to move / leave either directly or through escalation and was always able to find space out of the way of clinical staff to observe or write notes. I was known to the senior clinical staff and managers, however the junior doctors and nurses were frequently changed and (when very new) did not even know who other permanent members of the Emergency Department were: I was paid little attention. The almost constant busy state of the emergency care system, changes of rota shifts and movement of patients also contributed to my ability to move quietly and discreetly through the hospital to observe events and examine their causes.

Yin describes the potential for bias and lack of rigour in ethnographic study which were mitigated through the research design and my training (2014). However a further potential for bias that is relevant to my dual position of manager and researcher comes from what Hammersley and Atkinson term "overrapport": where the "task of analysis is abandoned in favour of the joys of participation" (1995, 87). The only time of anxiety that this level of bias might be introduced through my position was when observing a night shift. My presence was much more obvious as there was less patient volume and staff gathered at the nurse station where I often positioned myself for observation and note writing. However, the time was spent in candid conversation about the research and the perceptions of staff regarding patient demand and my role and trust responsibilities were not mentioned at all.

Additionally, the "Hawthorne effect", where people under observation will behave differently when observed (and more unpredictably when observed by a manager) was a potential bias (Hagel et al., 2015). However, as noted above, there was little evidence of staff being noticeably aware of my presence.

My initial assumption for the research was that the complexities of the case site could be studied in a systemic model manner, similar to Brailsford et al. who created a simulation model of performance for an urban emergency care system based on capacity and demand analysis (2004). As the research progressed, this assumption was refuted because of the more detailed and qualitative nature of the study and through evidence that the performance of the system studied in the case site was:

- Greatly affected through the agency and behaviour of its actors.
- Subject to changing workforce dynamics
- Influenced by internal structures within elements of the system.

This led to the recommendation to study the whole emergency care system further using an agent-based simulation model where the wider impact of the research can be applied to systemic improvements to emergency care.

The research conducted through the hybrid role was successful in gathering and analysing data which was subsequently validated by clinical staff. The outcome of the

quantitative assessment from the research was used to inform local improvement activities within the Trust. However in future research, I would consider more emphasis on the use of semi-structured interviews early in the study to understand the levels of agency in greater detail to complement my observations.

1.5 Organisation of the Thesis

1.5.1 Structure

This thesis is structured to follow the process of the research, firstly defining the research questions and then how they were addressed. Following an agreement with the Editor, papers relating to the chapters and the research process were published in series in the British Journal of Health Care Management in order to keep a consistent record of the progress of this research in a relevant journal. They are presented below in chronological order of publication which is consistent with the research process.

1.5.2 Chapters

Chapter 2 records the literature review in two parts. Part one defines the development and characteristics of the Enterprise Culture. Although this literature review supported the original research question, which looked to address the use of needs-led indicators in Emergency Departments, the findings led to an understanding of the complexities and components of the Enterprise Culture and led to changes to the research aims and questions.

The importance and impact of targets and indicators in the 'command and control structure' of the Enterprise Culture are discussed. The centralised target system employed through the Enterprise Culture contrasts with the best practice effective use of targets and indicators controlled by decision makers at a local level. Furthermore, data used in the indicators should be valid and un-confounded for effective use when generating improvements.

Part two examines the Enterprise Culture's efficacy in greater detail; to understand the private sector framework which the Enterprise Culture looks to adopt and to develop the research aims and questions. The chapter discusses the limitations of the Enterprise Culture in producing the high levels of performance and improvements to quality and efficiency seen in private sector best practice.

Centralised targets do not support improvement activities and the command and control structure can lead to a culture of fear and suspicion. The decentralised managers are not always capable of enacting the changes necessary to generate the outcomes expected through the Enterprise Culture.

The research methodology is discussed and justified in chapter 3. Although a broadly positivist approach was adopted to create a framework for intervention, an interpretive perspective was included to understand the influence of human perception which was a critical finding from the literature review. A critical realist approach was adopted to understand the causal mechanisms resulting from the rigid organisational structures and complex social relationships seen in the Enterprise Culture. A pragmatic paradigm with mixed methods was selected to achieve this. The confirmation of the research rationale, theory, questions and protocol following the findings from literature reviews are then selected. A deductive theory was justified to challenge and test whether the Enterprise Culture has provided a framework for performance improvement in a rural District General Hospital. This was influenced by complexity theory and methods were mixed pragmatically to test the theory and answer the following research question and hypothesis:

1. What is the nature of the emergency service users' demand?

2. What characteristics of the Enterprise Culture exist in the Emergency Departments and what are their effects on performance against the four-hour wait target?

3. Hypothesis: the private enterprise framework adopted by the Emergency Department is successful in achieving the aims of the Enterprise Culture.

4. How can the private enterprise best practice framework or other best practice method be introduced to meet the needs of the local emergency care system?

Chapter 4 describes the methods used to answer the research questions. Data gathering, analysis and validation methods are described.

In chapter 5, the first research question is addressed. Patient demand was quantitatively analysed and described in terms of attendance patterns and variation. The potential adoption of techniques used in the private sector to calculate the productivity rates needed to meet targets was discussed as a means of planning the Emergency Department to meet the four hour target. Issues with data recording practices were identified which prevented these calculations being made.

Chapter 6 addresses the second research question. Qualitative and quantitative methods were used to examine the resources, operational activities and relationship characteristics of the Enterprise Culture present in the Emergency Department and their effect on performance against the four hour wait target. The chapter discusses the findings regarding limited process definition and resource planning which were evident from the research. These limitations led to reactionary decisions relating to patient care. Barriers to effective performance caused by organisational structures and relationship were also evident.

The research hypothesis is addressed in chapter 7. The findings described in chapters 5 and 6 were validated using a modified Delphi and Nominal group technique and limitations caused by a lack of participant availability are discussed. An intervention was planned and implemented by the staff within the hospital's emergency care system to address local concerns regarding the provision of care plans and drug charts for patients who required clinical observation. The efficacy of this intervention, as a study of the Enterprise Culture's ability to promote quality and efficiency improvements, was evaluated quantitatively and qualitatively. The influence of the four hour wait target in achieving the Enterprise Culture's aims for generating quality and efficiency improvements is discussed along with the continued relational issues identified in a post-intervention ethnographic study. Insufficient evidence was found to support the hypothesis that the Enterprise Culture in the case study Emergency Department was successful in achieving quality and efficiency improvements.

Chapter 8 addresses the fourth research question. The key differences between the Enterprise Culture and private sector frameworks, identified in the first three research questions, are discussed. Key findings from the research suggested that the central four hour wait target has a significant influence on operational activities within the case site.

Central targets do not necessarily however address the needs of the Emergency Department or the whole emergency care system of which it is a part. A review of the whole emergency care system was proposed to understand the causal mechanisms of providing capacity to meet the demand for emergency care and aid decision making though the use of computer simulations. Contrary to private sector success, I argue that the people involved in the system studied were more influential on performance than the process and that a clear process used by competent staff and supported by empowered managers who can mentor improvement is necessary.

Chapter 9 forms the conclusion to the thesis and offers a reflective critique of contributions from and limitations to the research.

2 Literature Review

2.1 Introduction

The literature review is divided into two parts. Part one looks at the literature associated with an emerging Enterprise Culture and the use of performance indicators to inform the original research question proposed as the starting point for the research study: How have needs-led indicators been developed, what are they, to what extent are they implemented and do they lead to improvements in service delivery and quality of care in Emergency Departments in District General Hospitals? The review was completed in December 2012 and led the publication of a paper entitled 'Creating Enterprise Efficiencies in the English NHS'. This paper was accepted for publication in the British Journal of Healthcare Management in June 2013 and is included in appendix 8 (Turner et al., 2013a).

However, through the first review, the components and complexity of the policy underlying the use of indicators were identified. A further review was defined leading to changes in the research question and study aims and this review forms the second part of this chapter. This literature review addresses the implementation and efficacy of the Enterprise Culture and a deeper examination of the best practice framework the Enterprise Culture was developed to adopt. The second review was completed in September 2013 and led to the publication of a paper entitled 'Enterprise Efficiency Framework: the English NHS'. This paper was accepted for publication in the British Journal of Healthcare Management in November 2013 and is included in appendix 8 (Turner et al., 2013b).

2.1.1 Context of the Literature Review

This section will describe the strategy of the literature search in order to provide context for the results of the literature reviews discussed in sections 2.2 and 2.3.

2.1.1.1 Comprehensive Search: Strategy and Systematic Techniques

In order to fully identify subject knowledge for the reviews, a comprehensive search was conducted across the academic and grey literature (unpublished academic, government, professional and private sector publications). Search strategies were devised (and are

detailed in sections 2.2.1 and 2.3.1) for both reviews in order to produce manageable and relevant evidence for inclusion in the literature review (Boland et al., 2014). These strategies were designed using systematic techniques to manage the quality and quantity of returns from the search, and to provide a framework for synthesis of evidence. The design of the search strategy is discussed in the next section.

2.1.1.2 The Search Strategy Design

The search strategy followed a protocol described in figure 2.1

Figure 2.1: Search strategy protocol

The components of the search strategy protocol were:

1. A scoping search to capture the essence of the research aims was conducted in order to understand "the volume and type of evidence available for synthesis" (Boland et al., 2014, 21).
2. From the scoping search and the research rationale, specific keywords were identified (and are detailed in appendices 1 and 2) to ensure the search was "as comprehensive [i.e. sensitive] as possible" (Booth et al., 2012, 73). Synonyms, wildcards (*), truncations and Americanised spelling were considered in this step in order to ensure that the search returned any evidence relevant to the research aims but which had spellings or presentation that did not conform to accepted English academic standards.
3. A search statement was formed using the keywords and Boolean operators to search for "specific concepts" (Jesson et al., 2011, 28)

4. Databases specific to the research topic were identified, and are discussed and justified more clearly in sections 2.2.1 and 2.3.1. The search statements were amended to include and specific thesaurus headings or database indexing.
5. The search statements were adjusted to specify which criteria to exclude and the limits imposed on the search. The exclusions and limits are defined in sections 2.2.1 and 2.3.1.
6. Results were screened in order to select evidence that was relevant to the research aims and therefore to be included in the review (detailed in section 2.2.1. Returned documents were selected for inclusion firstly by evaluating the relevance of the title and then by relevance of the abstract which Booth et al. "believe is the most efficient way of screening studies for inclusion" (2012, 99).
7. The remaining evidence included was critically assessed and synthesised into the review and is discussed in the following section.
8. Citations found in influential evidence from the assessment, but not returned in their own right, were also screened and included in assessment and synthesis.

2.1.1.3 Assessment and Synthesis Techniques

The remaining evidence was finally adopted into the review by following the sub-steps described below:

1. Critical assessment
2. Data extraction
3. Synthesis of data

<u>Critical Assessment</u>

The quality of the remaining evidence was critically assessed to in order to ensure that they provide meaningful answers to the research aims. The Critical Appraisal Skills Programme (CASP) was used as the assessment tool to include or disqualify evidence from the review.

Data Extraction

From the evidence remaining from the critical assessment, relevant data were extracted for synthesis. Data were identified by highlighting relevant text in hard and electronic copies of each individual source document and summarising the data onto paper based data extraction forms. The data extraction forms detailed:

- Theme within the research aim.
- Description of the evidence and relevant critique.
- Relevant quotes.

Synthesis of Data

Data were presented and described in narrative form in the review and no quantitative synthesis was necessary. The data extraction forms were grouped by theme and similarities and differences between evidence were interpreted and recorded in order to make sense of the data, both descriptively and analytically as recommended by Boland et al. (2014, 87).

2.1.1.4 Screening Criteria

Screening for inclusion in the study was conducted in two phases. Firstly the title of the document returned in the search was assessed to ensure the context of the keywords, or associated phrase, was useful to addressing the research aims. Documents meeting this condition were copied into a folder marked “Title” on my Refworks (library software enabling a researcher to manage text for referencing) account.

Secondly, abstracts of the documents in the Title folder were then assessed to ensure that their aims and conclusions remained relevant to addressing my research aims. Those meeting these criteria were copied to a Refworks folder marked “Abstract” and this folder was used for the critique.

2.1.2 Existing research relevant to the aims of this study

This section describes research relevant to my study that existed at the time of the literature reviews, and discusses potential knowledge gaps that my research could address.

From the literature reviews, three themes emerged to describe original research that was relevant to the aims and rationale of my study. They were:

1. The efficiency and quality aspects of health policy
2. The systemic nature of Emergency Care
3. Holistic studies which combine efficiency and complex systems

These themes and the relevance to my study are discussed below. Potential gaps for areas research are identified.

2.1.2.1 The Efficiency and Quality Aspects of Health Policy

The four hour wait target, and other pressures seen internationally to improve waiting times, has led to research examining the flow of patients through Emergency Departments. Powell et al., for example, use quantitative computer models, calibrated with data from an urban hospital case site, to study the link between in-patient discharge and the patients' stay in the Emergency Department before admission (2010). Powell et al. demonstrate a theoretical improvement in the time Emergency Department patients requiring admission need to wait before a bed is available by testing a series of inpatient discharge hypotheses (2010). Although Powell et al's. study is an application to local level emergency care, it focuses on one process within the hospital and is not a representation of the hospital or wider emergency care system (2010). This creates opportunity to explore the complexities within that system in the model and an opportunity to test the theory of the modelled results.

Ng et al. use manufacturing based improvement techniques in order to attempt to decrease waiting time (2010). Working with clinical staff, Ng et al identify and eliminate "wasteful" Emergency Department activities, which cause delays to patient care, and combine useful activities to increase time utilisation (2010). Ng et al. demonstrate

improvement to the time patients stay in the Emergency Department and also add other measures of benefit such as patient satisfaction (2010). This encouraging evidence demonstrates improvements from the removal of some causal mechanisms but, as with Powell et al., is also an examination of one process within the hospital system and not the wider system (2010).

These studies begin to quantify causal mechanisms of the time patients spend in the Emergency Department and address novel and innovative ways to co-produce improvement with clinical staff in order to meet the aims of health policy. However, a gap still remains in offering a more holistic explanation of the causal mechanisms and a consideration of the wider emergency care system. Some studies do address this issue however, and are discussed below.

2.1.2.2 Systemic Nature of Emergency Care

The systemic nature of Emergency Departments is evident in the literature. Nugus et al. study Australian Emergency Departments as "Complex Adaptive Systems", taking a qualitative account of the agency of clinicians though ethnographic study and interviews (2010). This novel and relevant study has clear links to some aims of my research, however the specifics of Australian health policy are not considered openly (other than discussing the demand for integrated care). Comparisons to the four hour wait target and other relevant English policy influences cannot be made, however the influence of the agency of clinicians is relevant to my study and is considered in the methodology and discussion chapters.

Brailsford et al. study an English emergency care system to create a quantitative, logical model with which to test the robustness of performance within the complex system to meet the four hour wait target (2004). Although actors within the system were used to create this model, the effects of individuals' agency are not represented. However, the study provides useful evidence for my research, taken in the context of the high-level, urban nature of Brailsford et al's. methods.

2.1.2.3 Holistic Studies

Some studies combine both of the above elements. Abo-Hamad and Arisha study the flow of patients through an Emergency Department and consider both qualitative and

quantitative aspects to produce a simulation model to evaluate changes in capacity and demand and the predicted effect on performance indicators (2012). This model led to the identification of bed management as a key contributor to patient outflow from the Emergency Department and highlights the effects of the system outside of the department. Although Abo-Hamad and Arisha study emergency care within a hospital, the wider emergency care system and a more detailed consideration of the agency and behaviours of those within it remain an opportunity for research (2012).

The effects of the marketisation element of health policy are also studied. Jones et al. use ethnographic and interview methods to research how market-based policies affected one English health economy system (2013). In their research, the authors find that policies can be contradictory and show manipulation of national policy in local implementation. For example, local NHS managers make "national initiatives 'work for them' by adapting them to local interests" (Jones et al., 2013, 56) through re-labelling existing local initiatives as new government policy and prioritising which of the national health policy target to achieve.

Market-based policies are seen to "foster an adversarial environment" (Jones et al., 2013, 58) within health economies. Jones et al's. "broad focus" (2013) on a health economy is relevant to my research of the effects of implementing a specific policy target and offers guidance to focus on the effects of policy in a rural health care environment.

2.1.2.4 Conclusions

At the time of planning my study, contemporary projects relevant to my research aims and the opportunities they offer my protocol are shown in table 2.1.

Table 2.1: Research Relevant to this Study

Existing Research	Opportunity for my Research
Improvements examined to meet targets defined in policy. Jones et al. (2013); Abo-Hamad and Arisha (2012); Powell et al. (2010); Ng et al. (2010)	Understand the co-production of clinical / researcher interventions and apply to other expectations defined in policy: local improvements and efficiencies.
Complex systems studied qualitatively to understand agency or quantitatively to understand the performance within the system. Jones et al. (2013); Abo-Hamad and Arisha (2012); Brailsford et al. (2004); Nugus et al. (2010)	Explore a gap in the literature to focus a study of the systemic nature of the emergency care considering both agency and systemic logic.

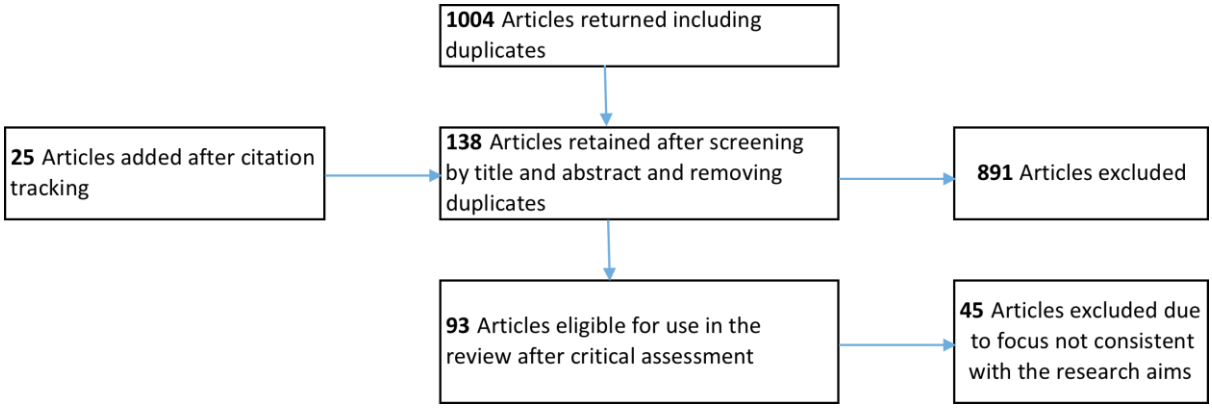
My research has the potential to add new knowledge through studying the implementation of two aspects of health policy (achieving a defined target and the need for efficiency) within a rural emergency care system.

2.2 Literature Review Part One

2.2.1 Search Strategy

The flow of studies through the search strategy is detailed in figure 2.2.

Figure 2.2: Search and synthesis flowchart – part one



Keywords relating to the research question were used with the relevant thesaurus headings to form the search strategies. The searches for each database are listed in appendix 1.

2.2.1.1 Inclusion Criteria

Limits to the search are (where available): major concepts for thesaurus headings, English language articles, abstracts available and published from year 1980 onwards. The limits were implemented to ensure that the literature was appropriate to the research topic, and considered changes in the use and efficacy of healthcare in the last three decades. For the emergency care indicators the search was limited to year 2000 to ensure that the literature was appropriate to the research topic and to consider changes in needs-led health care since the first Department of Health (DH) public consultation for NHS reform in 2001. Thesaurus headings were identified from the databases' index and a review of the headings attributed to relevant papers identified in preliminary searches. Additional literature was identified and reviewed from the reference section of articles which met the search criteria.

2.2.1.2 Exclusion Criteria

Articles were rejected through the title and abstract if they failed to meet the inclusion criteria. Articles discussing use of indicators of health care provider performance or quality within the United Kingdom were included in the search. Those concerned with the clinical quality of a specific condition were not included and articles relating to overseas research are included if they are directly related to a theme resulting from the review and help to inform the discussion.

Databases were searched separately to ensure that thesaurus terms applicable to each database and host are captured and to ensure that search terms translations did not result in missed articles.

The original searches conducted in March 2011 were refreshed in January 2015 to identify new material, limiting the search to publications in the United Kingdom only. This search found no new relevant evidence relating to the key themes identified in the chapter or the purpose of the research.

2.2.1.3 Electronic Search

The following databases for published work were searched electronically to identify books and articles relevant to the research:

- Academic Source Complete, via the EBSCO interface. This database contains multi-disciplinary, scholarly periodicals.

- Business Source Complete, via the EBSCO interface. Business, management, accounting and economic journals and magazines are listed within this database.

- COPAC Catalogue, via the Athens interface. This resource merges the catalogues of the major universities in the United Kingdom and Ireland and other major libraries including the British Library.

- Health Business Elite, via the NHS Evidence Health Information Resource interface. This database includes health care management and administration journals and non-clinical information.

- Health Management Information Consortium (HMIC), via the Athens interface. Health service management and administration journals from the Department of Health's Library and Information Services and King's Fund Information and Library Service.

- NHS Evidence Based Reviews, via the Athens Interface. This NHS library searches the Bandolier, Cochrane Library, Database of Abstract of Review of Effects, Health Technology Assessment Database, NHS Economic Evaluation Database

and UK Database of Uncertainties about the Effects of Treatments for evidence of healthcare decision making using systematic reviews.

- Web of Science, via the Athens interface. Academic journal abstracts from the sciences and humanities are contained in this database to gather operational manager perspectives.

2.2.1.4 Grey Search

The following sources for unpublished work were searched to identify information through doctoral dissertations, conference papers and technical publications and other grey literature relevant to the research.

- OpenSIGLE.
- Index to Theses
- ISI Proceedings
- UK Clinical Research Network
- Department of Health Performance Publications and Annual Reports

2.2.1.5 Citation Tracking

The terms 'indicator' and 'health care' produce a large volume of returns with a low relevance to this research: a significant proportion relate to indicators for clinical trials or progression of morbidity. To increase the volume of relevant evidence, references from articles used in the literature review were identified and searches were made on the authors' further work.

2.2.2 Review of the Literature Relating to the Emerging Enterprise Culture

2.2.2.1 Consideration of Definitions

Measuring health care is important to both providers and recipients, and evaluating quality and performance levels has been an area of much research. Avedis Donabedian is cited widely in the academic literature and his articles referenced below represent the citations and core themes of his work despite their age. Donabedian acknowledges that everyone will have their own descriptions and values of health care quality, but

summarises a definition as “a reflection of values and goals current in the medical care system and in the larger society of which it is a part” (1966, 167). Quality levels are determined by evaluating levels of measured performance against a standard or evaluation value (Kazandjian et al, 2003, 266; Donabedian, 1981, 410).

An understanding of performance measurement, and the nomenclature used to describe what is meant by measurement, does vary in the literature and has been discussed in detail since early articles started to address health care quality in depth (Donabedian, 1966; Sheps, 1955). Common understanding and current terminology recognise that interpretation of performance in health care is widely measured through indicators (Propper and Wilson, 2003, 264; Kazandjian et al, 2003) and performance management can be achieved by assessing the progress of the indicators. This research will use the term indicator to describe performance measurement of a component or whole health care system which can be used to inform the evaluation of quality when compared to targets, which the DH and recent United Kingdom literature (Propper et al, 2008; Bevan and Hood, 2006b) use to refer to Donabedian’s term “standards” (Donabedian, 1986). Other uses of the word indicator within health care, such as progress in a patient’s medical condition will not be considered.

2.2.2.2 English Health Policy and Governance

Following devolution of the UK government in 1999, NHS policy and governance has been the responsibility of the separate “regional” governments: Scottish Parliament, Northern Ireland Assembly, National Assembly for Wales and Department of Health in England (Greer, 2004, 1-25). Regions have similar basic health characteristics (Greer, 2004, 1-25) and follow a common health care funding framework and principles of health care delivery (Department of Health, 2000, 4); however, each government lacks “important powers” as they are within the supremacy of the Westminster parliament, which has the power to overrule or even eliminate the regional governments (Greer, 2004, 2). As a result health policies have diverged since devolution, despite good arguments to remain unified because that is the tendency for political systems in the course of solving problems (Greer, 2004, 1-25). Baggott argues that public health policy statements issued in 1999 for the separate regions were not “the first time” that different policies had emerged (2000, 78). Each region has a particular national

character and follows a different approach to administering performance indicators within policy (Blackman et al, 2009, 775). Waiting times for elective care, for example, represent a "key political issue" for government and the DH follows a "command and control" policy using targets and sanctions, in isolation from other UK government policies, to manage performance of that outcome (Propper et al, 2008, 1). As this research is conducted in an English DGH, the literature review will focus on DH use of indicators and targets within NHS England.

2.2.2.3 History and Development

The development and use of performance indicators in English health care is a result of successive governments' health policies for operating the NHS. This section will discuss the major influences on health policy in England and analyse how and why policy has been changed to adopt, develop and shape the use of targets and indicators in the English NHS.

Baggott states that defining and analysing health policy is difficult because both health and policy are interpreted in many ways (2007, 1-3). However this study will use his definition which he derived from consensus of a number of contemporary authors: "political processes that underlie the emergence of health issues, the formulation of policies and their implementation".

As health policy is a political process it is greatly influenced by party politics and ideologies. Traditionally, the English political parties would bring their own ideology to bear when in government. Conservatism looks to hierarchy and social order; neo-liberalism emphasises free markets and individuals and socialism, equality and state ownership (Baggott, 2007, 6). The socialist health policy under which the NHS was introduced by the labour government following the Second World War and was intended to offer equity of free health care access, funded mostly using national income tax: with the exception that less than 5% was to come from "contributory state insurance" (Hart, 2010, 1-2). The responsible minister, Aneurin Bevan - described as "a real socialist" (Hart, 2010, 1), faced considerable opposition from conservative politicians and economists, and medical general practitioners until public popularity became such that, soon after the launch, the service became "politically unassailable" (Hart, 2010, 3). Health policy is particularly important to political parties because it is a

critical public issue which captures the attention of the electorate (Baggott, 2007, 21; Hunter, 2003) and is a huge financial burden for the national purse (Pollock, 2005).

Hart suggests that health economists were largely agreed on the cost-effectiveness of the NHS model compared to other commercial models practised around the world until the conservative government, elected in 1979, started to adopt more competitive funding options (2010, 3). Labour increased public spending in 1974-75 but in 1976 a fiscal crisis provoked the International Monetary Fund (IMF) to force the Labour government to reduce NHS expenditure (Bevan and Robinson, 2005, 58). When the Conservative government under Prime Minister Margaret Thatcher succeeded Labour in 1979, they continued to face the financial constraints in healthcare funding and a policy shift was implemented to move the NHS from a hierarchical internal system to a free market system where public and private organisations compete to deliver health care within the NHS (Bevan and Robinson, 2005, 54). This "interesting combination of socialism and capitalism" (Bevan and Robinson, 2005, 55) was fuelled by Thatcher's rejection of financial pluralism, which had been the traditional socialist model that had prevailed since the NHS was introduced, in favour of "policies to generate incentives" for capitalist efficiency (Bevan and Robinson, 2005, 54).

Despite the change to the NHS's traditional hierarchy structure, party politics are influenced by competition and the desire to stay in, or be elected to, government and parties frequently use or adopt aspects of their rivals policy and ideology (Baggott, 2007, 9). And Labour's initial rebukes of the free market approach gave way to adoption of the enterprise policy when they regained the government in 1997 and, later, progressively adding to the market system when faced with their own crisis in funding (Bevan and Robinson, 2005, 56). Baggott agrees and argues that, since the election of the Labour government in 1997, party ideology and policy have become "even less clear" because of Labour's use of Conservative policy to secure votes in its manifesto (2007, 9) and post-election policy which was developed with "elements of both neo-liberalism and socialism" (2007, 28). Baggott illustrates this with examples of how Labour continued Conservative policy such as focus on health inequality, monitoring NHS performance and development of the NHS internal market – commissioners purchasing health care from the acute sector and using payment against results to increase competition (2007, 29-31). Wall and Owen also see a shift in policy based on

integration of ideology arguing that political ideologies have changed since the 1980's towards an "Enterprise Culture" (2003, 113-125). The Enterprise Culture is a concept adopted in this research to describe the effects of the convergence of political ideologies within health policy which "oblige" health service providers to adopt free market mechanisms to provide affordable health care on the basis of need (Wall and Owen, 2003, 117). Within the NHS, Wall and Owen argue, a culture of managerialism and control has replaced the traditional clinical culture because of the policy drive to imitate the private sector (2003, 113-125). This shift represents a challenge to the public sector as the dominant force providing health care services in which the government's decisions to distribute health resources according to social principles are upheld (Wall and Owen, 2003, 113-125).

Although primarily a political function, parties are exposed to external influences when developing health policy. International bodies such as the World Health Organization (WHO) also develop policy to achieve desired health outcomes, the success of which is measured against targets, (Baggott, 2000, 73-75). WHO intend that policy should define a nation's vision and direction for health, or as Hunter describes the "means and the ends" of the health system. Hunter illustrates his point with an example of a "mean" being a number of clinicians and an "end" being health gains (2003, 170). Analysis of UK policy led Hunter to state that the nation's "good intentions" for improving its "ends" have been adversely affected by the means of "micro-managing service delivery" through the command and control and target policy (2003, 170).

Lobbyist's and pressure groups can also influence health policy direction. Some groups have considerable influence from commercial interests or social movement (Baggott, 2007, 10). In particular the medical profession is a "potent force" and "exerts more influence over health policy than any other group" (Baggott, 2007, 125). Hunter notes however that doctors' influence has reduced from a position "close to absolute power" since the introduction of NHS managers (2003, 70), a point which will be discussed in the following section.

Because of the public's interest as voters, the media also has a keen interest in health policy. Baggott describes the media's role as complex because of its ability to both describe and shape health policy and the influence and bias it can bring to bear –

especially when using health "drama" involving celebrities (2007, 81-101). Baggott also notes the increasing use that pressure groups and politicians are making of the media in changing policy by influencing public opinion.

The effects of party politics and ideology have led to many changes to English health policy in recent years as the motivations for political power have developed the Enterprise Culture. The behaviours which drive the developments can be argued as a political function: government must be seen to do something to health care since it is such an important issue to voters (Baggott, 2007, 153). Health policy has been concentrated on treating sickness rather than preventing it partly because the nation's short electoral cycles could not allow demonstration of a measurable improvement in health and the associated reductions in treatment spend: good health upstream will equal less treatment downstream (Hunter, 2003, 161). Hunter also states that, despite the political rhetoric of a move towards health improvement rather than health care delivery, another reason that change to sickness prevention has not happened is because of the complex nature of implementing the necessary improvements. However, he notes that the cost of providing health care and the limitations of providing a health care service ensures that public and political interest and debate keeps the matter in constant focus (Hunter, 2003, 159-160). These ethical issues of whether health policy meets the needs of the nation or whether the time scales for political focus and policy are sufficient to be effective are not within the scope of this research. However, it is useful to note such issues have a considerable impact on the contextual framework of this study, identifying the boundaries that party politics and ideology work within and why parties in government adopt or modify opposition policy and make constant change, and are therefore included as a matter of debate in the thesis. Bevan and Robinson (2005, 71) conclude that the policy changes and adaptations across political ideologies since the inception of the NHS have delivered sub-optimal performance in cost-control, equity of health care delivery and efficiency due to path dependencies. Path dependencies refer to the effects of "the inertia from the history of previous decisions and existing institutions" (Bevan and Robinson, 2005, 53).

Performance management has been developed from political motivations to manage inefficiencies within a highly emotive public service. This has led to the development of an Enterprise Culture which is evolving to replicate the methods of performance

management that successful private companies use to remain competitive. The next section will discuss the emergence of the Enterprise Culture and the role of performance indicators within that ideology.

2.2.2.4 The Emerging Enterprise Culture and the use of Performance Indicators

Wall and Owen consider that the emerging Enterprise Culture within health care services since the early 1980's has increasingly involved contributions from the private and voluntary sectors (2003, 34-39). The influence from private enterprise is designed to reduce reliance on a state monopoly of health care provision and to allow commercial influences to generate efficiency and resource utilisation. Wall and Owen argue that synthesis is possible between various providers if strong government can ensure collective responsibility for the health of the nation (2003, 34-39). Pollock, however, sees a "complex web of contracts that will be difficult if not impossible to enforce" (2005, 225) and questions the effects of market incentives in providing health care through such a fragmented health service (2005, 228-231).

Traditionally, the use of voluntary or private resource provision in health care services is a conservative idea whilst socialist thinking would consider this approach as absolving the government of its responsibility to provide welfare (Wall and Owen, 2003, 34-39) - although Wall and Owen note that welfare pluralists would see such policy as acceptable because patients are being provided with the healthcare they need regardless of who provides it (government, voluntary or private providers).

As noted above, despite the largely conservatism ideology of the enterprise policy, the Labour government that was elected in 1997 has continued to make use of private health care provision. From the increasingly mixed party politics and ideology and the emergence of the Enterprise Culture, the use of performance indicators has gained prominence as a means of assuring and governing the achievement of the objectives defined in health policy. The use of indicators to assure performance has been developed to support the emerging Enterprise Culture in two key areas: the centralisation and decentralisation of delivering the health service and the internal and external market system of providing health care.

The long-term trend of English health policy has been centralisation and decentralisation of key elements of health service delivery. Development of health policy to focus on performance indicators with an "increasing use of command and control" tactics has necessitated centralised targets and regulation with the development of managers and agencies to deliver and assure performance (Baggott, 2007, 130-153). Whilst centralising monitor and control activities and empowering controlling regulating agencies, policy has also developed to decentralise management of health care and so push control towards the front line – although this has often been managed through a bureaucratic process such as the existence of Primary Care Trusts (PCT) (Wall and Owen, 2003, 163-167). Hunter agrees with this analysis of health policy evolution, commenting that health policy has been based on "complex solutions to complex problems" which has resulted in centralised, top down targets; a policy which has failed to lead to a shift towards health rather than health care (Hunter, 2003, 162-164).

Decentralisation has led to a more important role for NHS managers who are expected to improve efficiency, as managers would in a commercial business, as a result of the perception of a "wasteful" public sector with performance indicators intended to be a means of evaluating their level of success (Wall and Owen, 2003, 57-70). Despite this, there has been criticism of how management has been developed within the NHS. Hunter considers the management function to be "based crudely on traditional or 'Fordist' management" techniques which ignore the complexity of health care (Hunter, 2003, 162) and O'Regan considers the workforce demarcation "Taylorism in the extreme" (2006, 126). Also, although management has been developed as a key element to deliver policy, the presence of managers has not proved popular with clinicians (Wall and Owen, 2003, 57-70) and the power of the medical profession in particular has continued to obstruct the efficiency gains that policy hoped for (Baggott, 2007, 103-107). Managers may not have had the impact that political and ideological decentralisation expected of them because of clinical opposition, however the medical profession appears less powerful as a result of the emergence of the Enterprise Culture (Wall and Owen, 2003, 55-71; Hunter, 2003, 70). However, political use of command and control and targets continues, despite criticism, partly because governments do not trust managers to implement policy service reforms in respect to their re-election aspirations and need indicators and measures to judge performance against (Hunter,

2003, 165). Hunter believes that the system of management should be focussed on leading for health rather than health care and that judgement of health systems should not be based on the analysis of "politics and power" which has led to command and control and target cultures but instead towards analysis of "defects and deficits" within the health system (2003, 182).

The combination of centralisation and decentralisation within the emerging Enterprise Culture and use of performance indicators to evaluate its success has led to concern that blame is simply shifted from government to operational management through the devolved responsibility that command and control enforces (Baggott, 2007, 153). The number of targets to be achieved and the skills of NHS managers to achieve them (and other policy objectives) have led to concern. Hunter believes that targets focus managers away from long term organisational development, stifling innovation and improvement (2003, 165). Fewer targets and greater skills for managers would allow them to be more creative (Hunter, 2003, 165-166) although concern remains about the proportion of NHS budget spent on management and administration – a figure that has increased since the introduction of the Enterprise Culture (Pollock, 2005, 260) which she feels has not delivered the improved efficiency that policy expected. Public views have also been shown to strongly question the value of managers, and managers themselves are criticised for being responsible for building a complex role around a management ideology that is driven primarily by efficiency and not patient care (Learmonth, 1997, 216-220). Propper et al. however consider that managers' performance is shaped by policy arguing that, in their study of waiting time reductions in the English NHS, managers were presented with escalating targets, financial sanctions and a greater focus on performance which, when combined, changed behaviours (2008, 21).

The Enterprise Culture has two market systems which are intended to encourage competition and efficiency: the internal and external markets. The internal market consists of trades between commissioners of health care and health care providers. Although originally a Conservative policy, Labour have developed the internal market towards "privatisation" adding capitalist concepts such as Private Finance Initiative whereby private investment builds or develops acute health provision but receives contracts for servicing the facilities over future ("thirty or more") years (Pollock, 2005,

27). Pollock believes this push towards market trading and choice in healthcare lacks a mechanism for democratic local control which in turn produces variation depending on where the patient lives Pollock (2005, 45-56). Wall and Owen also see policy moving towards further evolution of primary care organisations ability to trade with providers in Britain (2003, 144). This approach seems justified given that Conservative government reforms which started in 2011 will see the formation of clinical commissioning groups with autonomy to purchase local healthcare services from private and NHS providers (Department of Health, 2011a). This should allow commissioners to achieve performance targets through greater patient choice.

Additionally, development of the external health care market – the transition from a public system accountable to Parliament towards a mixed public / private system accountable to independent regulators and influenced by financial penalties and incentives to those within the system – has been continued (Talbot-Smith et al., 2006, 104). Although this policy is intended to improve efficiency through competition not all commentators see this as a welcome move. Pollock raises concerns about more of the NHS budget going to private companies as a result of the NHS external market which destabilises NHS organisations and their finances and ultimately raises their costs (2005, 84). This view is contested by Wright who believes that the Labour government reform is not a change for self-interested politicians seeking re-election (which he believes would have been ill-founded in any case) and is not a replication of previous privatisation or reform models, but is a serious attempt to confront the problems the European Union (EU) is facing (2009, 354). Blair's Labour government summarised this tension of finding the most effective way control limited healthcare funding by stating that "there should be no organisational or ideological barriers to the delivery of high-quality health care free at the point of delivery" (Bevan and Robinson, 2005, 68-69) and proceeded to push forward extensions of the market systems such as Private Finance Initiative (PFI) which allows private companies to finance, build and maintain 'non-clinical services' over a contracted period (Bevan and Robinson, 2005, 69).

From this analysis of the development of English health policy, the conclusion is drawn that the increasing emergence of performance indicators are developed as a tool to support the emerging Enterprise Culture. Performance indicators are designed to provide information to evaluate the efficacy of decentralised management to achieve

centralised command and control targets. Development of the internal and external market systems is designed to provide an environment where the efficiency expectations from decentralisation can manifest and be evaluated through performance measures. The following section will analyse and debate the theory of performance indicators and the efficacy of implemented indicators in achieving the political motivations and intended uses behind the theory.

2.2.3 Effective use of Indicators

In a review of the literature concerning use of performance indicators for health care improvements, Freeman summarises two uses for indicators: firstly, as a summative means for external evaluation and secondly, used as an internal tool for quality improvement (2002). Freeman notes that the literature is "largely discursive, with an underdeveloped empirical base" but argues that the summative approach suffers because of the necessity for validity in both the selection of indicators used and the underlying data needed to make judgements on quality of care (2002, 128); instead he favours indicators used internally for continuous improvement of local contexts. However the performance indicators used for centralised command and control are summative and this section will analyse the debate around the use of summative indicators. The benefits of internal performance indicators will be discussed later in the chapter.

Pronovost and Lilford discuss the tensions which exist between scientists and policy makers when using performance indicators stating that policy makers are responsible for protecting the public interest and scientists are "dubious about the validity of many metrics" (2011, 569). The introduction of performance indicators has shifted the focus of trust in a system from internal and unrecorded controls to quantified metrics, a move which Freeman argues "may generate suspicion and fear" instead of trust which undermines the improvements that the indicators should deliver (2002, 129).

Performance Indicators are recognised to achieve the control expected in policy. Davies and Lampel acknowledge the effects that measuring and controlling performance had on waste and spend reduction and productivity increases in the NHS in the 1980s, and state that continuation was encouraged by the successes in the private sector (1998, 160). Now, however, they claim that the private sector is "abandoning control as the

key mechanism for achieving better results" in favour of decentralised autonomy to allow greater innovation and efficiency (1998, 160). Indeed in the most advanced innovative private companies "questioning, coaching and teaching take precedence over commanding and controlling" (Shook, 2008, 2), but this means managers having access to clear, unambiguous performance data to focus their resources. Even this is not within context of the advanced, innovative and efficient organisations. Womack emphasises that an organisation's purpose is the first thing to define in achieving the Enterprise Culture: what does the organisation need to do to improve customer (or patient and other stakeholder) satisfaction and what does the organisation need to do to survive and prosper (2011, 3-9)? Then measures for these purposes can be developed, owned by a manager responsible for delivering value directly to the customer and shared with everyone who works on delivering that value to the customer. This should drive the improvements by concentrating efforts on processes then people (Womack, 2011, 3-9).

As noted, the seriousness of the pressures on the health service, and the nature of reform and development of performance indicators, has been seen as a reasonable means of assuring that investment in health care results in service improvement. Wright acknowledges the financial investment noting that the Labour government has "doubled the NHS budget" between 1997 and 2005 but underpinned it with the ideals of national citizenship, economic management and full employment (2009, 335-335). Wright also argues that early moves by the Labour government to strengthen the centralised command and control system "through centralised targets [and] performance indicators" for improved delivery of care was followed by needs-led benefits of decentralised service improvements, patient choice and competition (2009, 336). This approach, he argues, is a necessary mechanism to tackle such a socio-economic problem.

Whilst the seriousness of the pressures on the health service is not commonly disputed in the literature, the efficacy of performance indicators to achieve the necessary improvements are questioned. Goddard et al. note that the nature (and reality) of using summative performance indicators is to manage poor performers rather than to identify best practice and encourage improved system-wide performance (1999), despite improved performance being a key factor in performance management in an Enterprise

Culture. Measurement systems are also deemed to be "imperfect" and in need of improvement in order to remove "imprecision and bias" and so to be of use to policy makers and health care providers (Pronovost and Lilford, 2011, 572). Chosen indicators must also evaluate the needs of the service users. Adab et al. note that not all health care outcomes that society values can be measured and suggest that although the public and purchasers of health care services have the right to understand the quality of their health services it is "irresponsible" to provide poor quality information that is difficult to interpret (2002, 96).

Furthermore, the disadvantages of using performance indicators to relieve health service pressure can lie within the historic nature of the indicators themselves. Performance indicators are incapable of "showing why particular results were obtained" (Freeman, 2002, 130) and measure "end of process error detection rather than built in quality", meaning that delays in improvement can only occur after the event (Davies and Lampel, 1998, 160). This mis-use of performance indicators is even endemic in the private sector which the Enterprise Culture is designed to emulate. Mauboussin states that common performance measures fail to comply with to two tests of usefulness: that measurement systems will produce a consistent metric over time for the same action and that they demonstrate cause and effect to meet an objective (2012, 48-53). Davies and Lampel also state concerns about drawing useful interpretation from unstable observational data and that measuring performance, which is motivational or coercive, will lead to behaviour that is not representative of the underlying process (1998, 160) – discussed in detail later in this chapter. A common theme in the literature is that the nature of performance indicators does not testify the reality of process performance but that evaluation of the results leads the individuals responsible for the underlying data into defensive action instead of innovation to improve the needs of their process (Davies and Lampel, 1998; Bevan and Hood, 2006b; Freeman, 2002). A reason for this may be found in research undertaken by Giuffrida et al. which investigated the effect that factors outside the control of primary care services had on their ability to meet performance targets. This study concludes that "performance indicators should relate to the aspects of care that can be controlled by decision makers" (1999, 94). Furthermore, Freeman stresses the need to remove confounding factors (for example

local health economy and socio-economic variations) which may cause variation in the output being measured (2002, 131).

Performance indicators also offer only a limited opportunity to identify opportunities for improvement to health services and encourage the improvements to be made. In an editorial for the British Medical Journal (BMJ), Mulligan and Appleby question how well summative performance indicators help to "identify which parts of a system contribute the most to improved health" and also question the extent to which those indicators show how well the services measured affect the nation's health - considering "people with poorer health in particular" (2000, 191-192). Mulligan and Appleby answer both questions with "little" because they argue that there is no way of understanding such a complex system's details based on indicators alone. This is unfortunate because they consider that indicators are "the only show in town" for managing health service improvement (2000, 191-192).

Investigation into public demand for information provided by performance indicators is scarce. Magee et al. found through research using focus groups that public reaction was "ambivalent to the value of performance indicators", however the focus groups felt that accountability and monitoring of health service provision was necessary (2003, 341). A further finding of the study suggests that education is needed for the public and clinicians to interpret and use the data. Magee et al. formed focus groups in urban and densely populated English cities and regions and did not include the more rural health providers whose patients are less able to benefit from a choice of health care provider, this gap in the literature presents is valuable to this research because of the rural patient and low population urban area the case study hospital serves (2003).

Performance indicators and measures can be useful if restricted to factors controlled by decision makers, use valid and un-confounded data and do not cross complex system boundaries, but this is unlikely in health care in England because of the complexities that Mulligan and Appleby note (2000). Performance indicators "are not axiomatically good" and "may be inaccurate, misleading and even dangerous" (Freeman, 2002, 134).

2.2.3.1 Theoretical Concepts of Political Ideologies and Performance Indicators in English Health Care: A Summary

English health policy has developed largely under the influence of party politics and ideology with additional input from external bodies. Analysis of politics suggests an unwillingness to transform the long term needs of the health service towards good health which will prevent future treatment in favour of more measurable short term change which will be observable within electoral cycles. To achieve this, command and control (using performance indicators and targets) is used to manage policy and judge its efficacy.

The Labour government elected in 1997 formed English health policy as a contract between the individual and the state and began to set targets for key performance indicators (Baggott, 2007). However the internal and external market systems of health care delivery, decentralised management systems and centralisation of power and regulation have been increasing since the mid 1980s – following a conservatism ideology through successive governments (Baggott, 2007). These policy changes have fuelled the need for performance indicators and the command and control and target based culture, which has been criticised because it does not focus on improved health and blocks creative leadership, is not appropriate to complex systems such as English health care and is beyond the decision making capability of the decentralised management structure that the Enterprise Culture has developed.

Baggott concludes that command and control and the "initiativitis" of NHS change are "likely to lead to further gaps between policy and practice in the future" (2007, 153). Although current health policy and strategy are largely shaped to achieve measurable targets Baggott provides a useful conclusion: "goals and targets can only set a direction, they cannot guarantee success", (2000, 84).

2.2.3.2 The Application of Performance Indicators in the English NHS

NHS improvement, including the associated increases in spend and initial targets, was set out in the NHS Plan (Department of Health, 2000); proposing more autonomy for the NHS to achieve greater health care outcomes (demonstrated in targets and indicators) but with more accountability for the increased investment. Failure to meet this "aggressive target regime" carries heavy sanctions (Propper et al, 2008, 18), however

achievement of performance targets may lead to reward (Propper and Wilson, 2003, 251; Department of Health, 2000, 67). Since the implementation of the NHS plan, English health care targets and indicators are intended for use as a means of informing choice for health care users and stakeholders as well "as a means of improving health care services" (Propper et al, 2006, 1) and a means to reduce key variables such as waiting times (Damiani et al, 2005, 1). Propper et al. also comment on choice as an enabler of economic efficiency, relating to the consumer's power of choice which drives private firms to such improvements (2006, 1).

Patient choice and social engagement have been at the fore of NHS policy since the publication of the NHS Plan where patients are increasingly defined and treated as consumers, being well informed, literate and clear in their expectations of health care (Morris et al, 2006). The DH framework for the policy of providing choice in health care includes incentives for commissioners and providers of health care to improve (performance management and payment by results) and patient booking systems to allow patients enact their choice (Department of Health 2004).

Following a change of government in 2010, the DH re-confirmed patients and commissioners as critical users of health care indicators and stressed the importance of the link between performance information and improved quality of health care services (Department of Health, 2011a). An "information revolution" consultation was launched to define the best ways to provide clear and accessible information for patients to make decisions about health care quality when considering choice of provider (Department of Health, 2011a).

Since the implementation of the NHS Plan, further implementation of the Enterprise Culture has emerged through performance management and choice of health care provision mechanisms.

2.2.3.3 Efficacy of Performance Indicators in the English NHS

Managing performance indicators has been shown to improve performance in key NHS policy process targets such as waiting time reduction (Bevan and Hood, 2006a; Bevan and Hood 2006b; Propper et al, 2008) and emergency care targets (Alberti, 2007). Using

performance indicators to improve health outcomes is also seen as "appropriate" providing data standardisation and case-mix adjustments (Mant, 2001, 479).

However, the nature of targets and the means of measuring and achieving them have faced criticism because of the "incentives to cheat both by target setters and target managers" (Bevan and Hood, 2006b, 519). These incentives are negative (risk of dismissal and "name and shame") and positive (bonuses and budget allocation), (Bevan and Hood, 2006b, 518-519). Furthermore, competitive management, encouraged through the Enterprise Culture, causes a great incentive when a "main lever was the threat to senior managers' jobs" (Propper et al, 2008, 4). Propper et al state that attainment of a target may not result in wider welfare increases because "reducing long waits does not necessarily lead to shorter mean or median waiting times" (2008, 21). Use of indicators as a basis for praise or sanction is seen as "almost inevitably corrosive and corrupting" as it places trust in systems and not individuals (Freeman, 2002, 134). Bevan and Hood suggest that two assumptions are made when governing through targets: synecdoche (assuming that conclusions about part of a population can stand for the whole) and game proof design (2006b, 533), concluding that the assumptions are not justified in NHS target governance.

The Enterprise Culture also appears unpopular with the public. Wallace and Taylor-Gooby's research of NHS users finds that market system, management structures and targets do not conform to patients' deontological and teleological values (2009, 210-216). Targets are criticised in Wallace and Taylor-Gooby's paper as "short-sighted" (2009, 210) and the authors conclude that patients' view of care performance should be established "not just through rational calculus, but within and through normative value frames" (2009, 216).

Additionally, large occurrences of statistical outliers (over-dispersion) have also been linked to NHS indicators focussing on emergency readmissions (Spiegelhalter, 2005). Outliers occur when indicator values lie outside two or three standard deviations from the mean and so are exceptions to the central tendency of the data. Spiegelhalter concludes that the cause of the high volume of outliers is due to many small factors which occur within individual organisations and that "these may not be particularly important nor indicate poor quality care" (2005, 348). Spiegelhalter suggests that this

problem can be managed by either not using the indicator or by incorporating a random effects model (which seeks to control unobserved heterogeneity in data) to reduce variation by smoothing the stochastic nature of the data (2005, 351).

Data ambiguity, perverse outcomes and fabrication have also been reported when organisations' measurement of the indicator has contributed to target achievement (Bevan and Hood, 2006a). Bevan and Hood describe "gaming" to achieve targets giving examples of General Practitioners managing the target for patients waiting no more than two days for an appointment by refusing patients the opportunity to book appointment more than two days in advance and patients waiting in Ambulances outside Emergency Department to avoid breaching the Emergency Department four hour or less wait target (2006a, 421). Freeman also concludes that "the precision of data required to make summative comparisons" between separate NHS Trusts presents technical problems when using indicators which may lead to negative unintended consequences (2002, 134) such as measurement system bias. Walburg notes that the quality and selection of indicators can be over-simplified in order to make measurement possible and notes an equally important factor for using indicators: the means and frequency of data feedback is essential for "permanent improvement" from indicator use (2006, 35): a more localised consideration than the incentives and punishments driven by policy interpretation of indicators.

Definition and administration of health policy delivery has been devolved to multiple government agencies. Some indicators have been developed by separate agencies which conflict with each other causing confusion at a local level as to which indicator or target achievement takes priority, problems in establishing relationships between indicators and misunderstanding when establishing connections between indicators and targets (Micheli and Neely, 2010).

Even with uncorrupted information, indicators may not lead to useful relative performance management tools within the public sector. Variations in measures may be caused by local differences (clinical-mix, for example) and some adjustment may be necessary for the heterogeneity of the inputs (Propper and Wilson, 2003, 264). Additionally, as indicators in healthcare often measure outcomes, the use of internal process indicators to improve production and to reward good health outcomes is

recommended (Mant, 2001, 479; Propper and Wilson, 2003, 264; Department of Health, 2010a). Achievement of a suitable target with a reliable central outcome indicator may be at the expense of local needs and demands and can lead to "managers doing what was expected of them rather than what was desirable locally" (Hunter, 2003, 95).

Success in target achievement does not necessarily equate to better health care or achievement of policy outcomes. Bevan and Hood conclude that "a consequence was that although there were indeed dramatic improvements in reported performance, we do not know the extent to which these were genuine or offset by gaming that resulted in reductions in performance that was not captured by targets" from their research (Bevan and Hood, 2006b, 533).

Centrally driven targets such as the English command and control approach - which makes use of a "strong audit culture" and performance management - (Blackman et al., 2009, 763) to health inequalities are criticised because they do not fit with complex system and or multi-agency problems and may have little effect improving performance to policy expectations (Blackman et al., 2009; Raine and McIvor, 2006). Some research also argues that public sector agencies have multiple stakeholders with sometimes conflicting goals leading to complexity and confusion in the purpose of outcomes, failure to achieve policy and a potential need for a range of indicators to be used in performance management (Propper and Wilson, 2003, 264; Hunter, 2003, 126-136).

The efficacy of targets and indicators in patient and commissioner choice is unclear. Research has suggested that competition between hospitals can improve outcomes – subject to certain conditions – but that no firm conclusions exist to support competition as a useful indicator for choice between health care providers (Propper et al, 2006, 16). Propper et al. note a gap in the literature due to the lack of evidence for evaluating choice in English healthcare and note that much evidence was taken from American research (2006, 13). Furthermore, in spite of government intentions to improve patient choice through general practitioner commissioning consortia (Department of Health, 2010a), evidence suggests the choices made by patients may conflict with those who pay for healthcare (Propper et al, 2006, 16). Also, although the internal and external markets should allow empowerment to patients, Wall and Owen find the evidence of

this “limited and piecemeal” however they do note that doctors can “no longer dictate to their patients as they once could” (2003, 62).

Research regarding the impact that publication of performance information has on care quality has been difficult to find through the review, however despite the “scant evidence” one research of largely non-UK healthcare establishments suggests that public release does stimulate quality improvements (Fung et al., 2008).

2.2.3.4 The Future of Performance Indicators in English Health Care

Following the criticism of the limitations of indicators and targets and their use in English health care policy, research suggests a move away from “myopic” performance management towards targets for which an entire health system is responsible (Hunter, 2003, 96), which have clear priorities and where the role that the system is to fulfil is established (Micheli and Neely, 2010). Local management and continuous improvement of the factors and needs which influence improved health in individuals and communities, and the time to implement and check progress, should be a suitable replacement (Hunter, 2003, 101-136; Freeman, 2002, 134).

A government White Paper issued in 2010 set out a framework to change the measurements within health care (Department of Health, 2010a). The White Paper confirmed that patients are “at the heart of the NHS” and detailed shared clinician / patient responsibility for decision making, greater choice for patients in who provides their primary and secondary care and the ability to “rate” hospitals and clinical departments in order to encourage high standards through competitiveness (Department of Health, 2010a). The focus of targets and indicators was to be directed towards clinically credible health outcomes rather than “process” - meaning time-led and not internal process - targets (Department of Health, 2011a). Following consultation on the White Paper, the DH declared “widespread enthusiasm” for the proposed changes and noted clinical involvement in target setting (Department of Health, 2011a). The standards for emergency care (detailed in part two of the chapter) for example, involved clinical input from the College of Emergency Medicine and the Royal College of Nursing (Department of Health, 2010b).

Despite this policy change, however, emotive responses have been made to the use of outcomes based indicators and targets used in a competitive financial health care sector (Whitehead et al, 2010). And outcome based measures applied across a nation do not meet the local system indicators for continuous improvement advocated by Freeman, Mant and Hunter and which move towards the purpose measures that Womack identified as a characteristic in successful enterprise organisations.

2.2.3.5 Summary of the Effective use of Indicators

Performance indicators are developing in order to evaluate the emerging Enterprise Culture. The Enterprise Culture itself is a political attempt to improve efficiency and reduce pressures on the health service. Indicators developed are centralised and used in a command and control fashion to evaluated decentralised management within a health market environment.

Indicators used in English health care have shown progress towards expectation but have been criticised because of the efficacy of targets to achieve policy, unsuitable use and volume of indicators and the quality of data. Better use of indicators suggests fewer but more specific measures, system wide indicators, local usage to address internal system needs and variations and more use of process indicators relevant to that system.

The indicators and targets in England moved to outcomes based measurements in the financial year 2011/12 (Department of Health, 2011a) and in the second part of the chapter (section 2.3), the use of indicators in Emergency Departments will be discussed in context of the needs of emergency care provided by DGH.

2.2.4 Conclusions to the Review of the Literature Relating to the Emerging Enterprise Culture

The successful use of enterprise performance indicators and measures is dependent on their design and application. To replicate the successes demonstrated in enterprise, performance indicators require the following characteristics. Firstly they should be restricted to factors controlled by decision makers and not centralised policy makers in order to address localised improvement opportunities without the need for defensive action. Secondly, they should use valid and un-confounded data with no crossing of

complex system boundaries to ensure an accurate evaluation of the improvement purpose.

These characteristics are unlikely to be found in English health care because of the complexities of the Enterprise Culture which underpins their design and use. Centralised targets and the command and control approach of monitoring and adjusting can remove focus from local problems and encourage data inaccuracies and an environment of suspicion and fear. Instead of empowered and skilled managers who embrace improvement opportunities shown by indicators, the NHS often encounters expensive and defensive actions from managers the effects of which are described clearly in the Francis report (Public Inquiry, 2013). The Francis report investigates system wide cases of patient safety, care quality and concerns over culture and management at an English acute healthcare Trust.

The key points identified from this literature review of the emerging Enterprise Culture are:

- Centralised target culture draws focus away from local long term development and system defects and innovation.
- Enterprise efficiency comes from decentralised autonomy, not centralised command and control.
- Greater management skills and fewer targets are required to improve efficiency.

Following the findings of this literature review, the original research question, 'How have needs-led indicators been developed, what are they, to what extent are they implemented and do they lead to improvements in service delivery and quality of care in Emergency Departments in District General Hospitals?', is incomplete. The components and complexities of the Enterprise Culture are far wider than the implementation of indicators. The key points identified above are taken forward to part two of the literature review which examines enterprise efficiencies in the English NHS and the framework underpinning enterprise best practice.

2.3 Literature Review Part Two

The purpose of the this section of the literature review is to examine in greater detail the implementation and efficacy of the Enterprise Culture identified in the first part of this chapter and to refine the findings of the review into a clear research subject. The review considers the framework underpinning the successful improvements in quality and efficiency seen in the private sector and how it is reflected in the Enterprise Culture.

The review also identifies differences between the Enterprise Culture and the private sector framework and leads to development of the research theory and refinement of the research questions.

2.3.1 Search Strategy

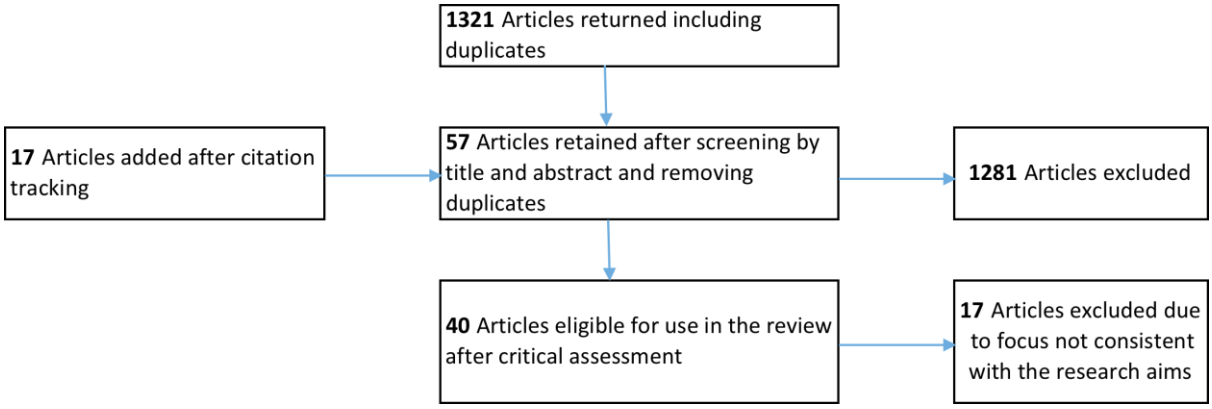
The search strategy for this literature review was identical to that of the search detailed in part one with the following exceptions.

Additional databases searched were:

- CINAHL, via the EBSCO interface. This database contains nursing and allied health journals, evidence-based care sheets.
- PubMed, via the NCBI interface. This database's publications are scholarly journals which cover the areas of life sciences, behavioural sciences, chemical sciences and bioengineering. The database includes the MEDLINE and other life science databases.

An additional search structure is detailed in appendix 2. The flow of studies through the search strategy is detailed in figure 2.3.

Figure 2.3: Search and synthesis flowchart – part two



2.3.2 Review of the Literature relating to the Efficacy of the Enterprise Culture

2.3.2.1 Emergency Department Indicators Implemented Following the NHS Plan

As outlined in the earlier part of chapter 2, in a government consultation in 2000 participants from the public and NHS staff deemed Emergency Department waiting times to be a critical aspect of emergency care performance, and judged waits to be excessive and varied across the country. From this consultation, targets for emergency care were created by the DH in the NHS Plan (Department of Health, 2000). The DH subsequently set its strategy to deliver its Emergency Department performance target under the first reforming emergency care paper (Department of Health, 2001). The target for Emergency Departments was stated: "by 2004 no-one [is] to wait more than 4 hours in an A&E [sic] department from arrival to admission to a bed in the hospital, transfer elsewhere or discharge. The average length of waiting should fall to 75 minutes".

The DH understood that not all patients could be admitted or treated and discharged within four hours so the target was expected to be met in 98% of Emergency Department attendances. The remaining two per cent acknowledged patients with certain complicated or special needs (clinical exceptions) whose quality of care was best placed with the Emergency Department (Department of Health, 2003).

Despite this, Emergency Departments experienced difficulties in achieving the target and a House of Commons Committee review of public accounts in 2005 reported

incidences of Emergency Departments breaching the four hour target more often than the 2% expected. However, they also noted an increased national demand for emergency care within Emergency Departments. The Committee's paper stated that "a number of Trusts still have some way to go since only around seventy Trusts had consistently achieved the weekly mark of 98%" (House of Commons Committee of Public Accounts, 2005). The paper also reported clinical staff's defence of the target breaches citing high volumes of highly acute or dependant patients whose Emergency Department care required more than four hours. This, however, was dismissed by the DH in the paper stating that the "98% target was not chosen arbitrarily and certain categories of patient, such as those with mental ill-health, were included in the clinical exceptions". Nevertheless, clinical pressure remained (College of Emergency Medicine, 2008) and the DH tolerance was raised to five per cent following the 2010 change of government (Lansley, 2010) – although local NHS commissioner Trusts continue to be able to set their own targets in their contracts with Emergency Department providers.

Since publication of the NHS Plan in 2000, the government has invested heavily in supporting emergency care provision. Patients who require emergency care were offered alternatives facilities to Emergency Departments, improvements were made to Emergency Department facilities and more devolved clinical decision making was pursued to assist Emergency Departments to meet the targets (Alberti, 2004 and 2007). Best practice frameworks and methods such as the NHS Institute for Innovation and Improvement's 'Productive' series and the Emergency Care Intensive Support Team (ECIST) have been developed to support health care providers. These functions and resources are implemented to help to standardise practice (Alberti, 2007, Office of Strategic Health Authorities, 2009) through dissemination of best practice and innovation techniques.

2.3.2.2 Efficacy of Emergency Department Indicators Following the NHS Plan

As a result of the increased government investment, performance, as measured against the target, has been encouraging and nationally the target was achieved in 2005 (Alberti, 2007). However, as noted in the earlier part of chapter 2, target attainment has faced much criticism and the Emergency Department target achievement is associated with dysfunction through inappropriate patient management, data manipulation and costly

staff supplements (British Medical Association, 2005). Furthermore, performance is highly variable, and sustainment of the improvements is unclear. Data published in the Health Service Journal shows a 6 month period in 2012 – 2013 where the English NHS have failed to meet the four hour wait target (Clover, 2013).

The literature also describes consequential dysfunctions identified as a result of the use of indicators. British Medical Association's (BMA) report gave examples of cancellation of elective surgery, discharge of Emergency Department patients who were not stabilised or adequately assessed and hospitals recruiting additional agency staff during the periods of measurement in order to attain targets. Models for efficient care, where Emergency Department and Medical Assessment Units were co-located and shared the same four hour targets, also provide positive results in target attainment and continuous patient care (Boyle et al, 2008). However, Boyle et al. note that physical and financial resources and admission direct to the appropriate specialty are required; criteria that may not be available to a DGH. Boyle et al. also stress that that the efficiencies "place the hospital at a financial disadvantage" from reduced tariff payments for patients who would previously have been admitted (2008).

Kelman and Friedman researched some of these claims and found that, at a national level, there is no evidence to support the dysfunctional consequences of the four hour wait target attainment (2009). Kelman and Friedman's work is limited in drawing wide assurances that the four hour wait is not gained at the expense of dysfunctional consequences elsewhere (2009). Firstly, they acknowledge that not all of the improvements to waiting times are attributable to the target – as noted the NHS received significantly increased investment following the publication of the NHS plan. Secondly, the hypotheses that Kelman and Friedman test do not account for all of the accusations levelled at target achievement: namely data falsification – although Kelman and Friedman are sceptical about the magnitude of the problem and the bias falsified data would have had on their research (2009, 941). Achievement of the targets and the measurement of a limited number of consequential effects do not mean that the indicators support the local organisation's best interests. Micheli and Neeley note that local organisations "are forced to adopt measurement targets and indicators that can be used in the political negotiation process" (2010, 15). This causes a system breakdown because, although targets may come down from central government in a clear and easy

manner, it is not clear to organisations how demands for support and decision making power go back up to central government (Micheli and Neeley, 2010, 15).

The consequences of the Enterprise Culture are also studied by Blunt et al. who research the reason for increased emergency admissions between 2004 and 2009 (2010). The number of emergency admissions is an important metric for an emergency department and the hospital finances since emergencies admissions in excess of those recorded in the financial year 2008 / 2009 are paid at 30% of tariff unless the provider Trust has a special agreement with its commissioners. The reason for this within the Enterprise Culture is to encourage hospital avoidance so acute health services do not to admit and discharge patients unnecessarily (Blunt et al., 2010, 5) and commissioning Trusts retain money to treat the patient in the right place at the right time – i.e. care in the community.

The result of Blunt et al.'s study indicates that the increase in admissions is higher than the associated increase in Emergency Department attendances, but this is not associated with a particular type of illness or age group and that an increase in short stays of the additional patients together with lower mortality rates suggests that lower acuteness (the severity of the patients' condition) cases are being admitted (2010, 8). Blunt et al. state that higher admissions form part of a long term trend but that policies such as the four hour maximum wait may have exacerbated the problem (2010, 8). The research compares the relationship between breaches and zero day length of stay admissions to investigate the problem of patients being admitted simply to avoid a breach and concludes that, at a national level, there is nothing to suggest this is a significant effect on the increase in admissions - although some individual Trusts "show patterns that indicate a link between admissions and targets" (Blunt et al., 2010, 5-6).

Moreover, the four hour wait indicator is a measure of hospital efficiency, a fact that the government acknowledged before introducing the target in an editorial in the Emergency Medicine Journal where the need for collaborative, system wide relationships and factors affecting patient admission were described (Lammy, 2003, 112). This is a requirement of the Enterprise Culture method as the four hour target is linked to a higher level centralised objective which is then cascaded and aligned to local usage through linked targets and indicators: the "golden thread" (Micheli and Neeley,

2010, 5). The objective that the four hour wait target supports is to "improve service standards" in acute hospitals along with targets addressing inpatient and outpatient waiting time, appointment waits and access to professional and public accountability (Micheli and Neeley, 2010, 11). Cooke et al. demonstrate this link stating that "waits over four hours are correlated with the average bed occupancy in acute Trusts" (2004, 575). This may be acceptable as an Enterprise Culture ideal: patients in Emergency Departments want their care to progress quickly and are not concerned about how it is facilitated, but the command and control function and decentralised management within the English NHS, discussed in the first part of the chapter, means that Emergency Department managers will feel the punitive repercussions of failing the target, or indulge in gaming (Bevan and Hood, 2006b).

2.3.2.3 Changes to Indicators in English Emergency Departments

Following intense lobbying and a change of government, in June 2010 the College of Emergency Medicine secured an agreement from the Secretary of State for Health to abolish the four hour standard from April 2011. In its place the Secretary requested that clinicians develop a new dashboard of quality indicators whilst still recognising that "timeliness of care is an important element of quality" (Lansley, 2010). The clinician developed Emergency Care Quality Indicators (listed below) which followed consultation were created to improve health outcomes and shift away from targets which focus only on the process, such as the emergency care four hour wait limit, which "get in the way of patient care" (Department of Health, 2011a).

- Left department before being seen for treatment rate
- Re-attendance rate
- Time to initial assessment
- Time to treatment
- Total time in Emergency Department

Published as experimental statistics by the Health and Social Care Information Centre (HSCIC) these data are provided to "help share information on the quality of care of [Emergency Department] services to stimulate the discussion and debate between

patients, clinicians, providers and commissioners, which is needed in a culture of continuous improvement" (HSCIC, 2013).

To manage delivery of the health outcome targets, the DH noted the increased regulatory role of Monitor (the health care regulator) to "promote the economy, efficiency and effectiveness in the provision of service" (Department of Health, 2011a). This confirmation that the changes will continue to support the Enterprise Culture caused concern that the Emergency Department Quality Indicators will be used for performance management using similar command and control tactics to the policies described in part one of the chapter and not clinical best practice and improvement (Whitehead et al, 2010).

2.3.2.4 Health Outcome and Process Indicators

The four hour wait indicator implemented as a result of the NHS Plan was intended to be a measure of the performance of hospitals' emergency care processes and practices of meeting a target (Department of Health, 2000). But as noted, the changes to Emergency Department indicators are a move towards representation of health outcomes (Department of Health, 2011a) and performance improvement (HSCIC, 2013).

However, health outcome indicators represent the "final outcome of a patient encounter with the health sector" and the literature contains agreement that Emergency Department indicators should focus on areas under the emergency clinicians influence (Cameron et al., 2011, 735), while Beattie and Mackway-Jones note that "health care providers are being urged to measure outcomes" (2004, 48). Emergency medicine, however, is different from other medical and surgical specialties because Emergency Departments are presented with symptoms and the patient's episode in the department may not result in a confirmed diagnosis. This makes health outcomes "difficult" to measure (Cameron et al., 2011, 735) and although Emergency Department influence other NHS indicators, such as outcomes for trauma patients, the contribution is "difficult to quantify" (Beattie and Mackway-Jones, 2004, 47). Additionally, patients whose time in an Emergency Department is only part of their acute care are more likely to be concerned with "timeliness and appropriateness of the diagnostic and therapeutic processes" when evaluating Emergency Department performance (Beattie and Mackway-Jones, 2004, 48).

The government move from process to outcome indicators does not address the issues for locally derived indicators discussed in the first part of chapter two. Research has also demonstrated that Emergency Department indicators need to have a combination of indicator types in order to be useful for improvement purposes. Furthermore, Whitehead et al note that risks to equity can result from financial penalties linked to health outcomes if "providers focus their efforts on healthier more affluent populations for whom improved outcomes would be easier to achieve" (2010, 1374).

Research undertaken by Beattie and Mackway-Jones using a Delphi method identifies thirty six potential indicators for Emergency Departments, only two of which are outcome indicators, ten are structure and the remaining twenty four are process (2004, 49).

Cameron et al.'s research to suggest parameters to measure quality emergency care notes the needs of Emergency Department stakeholders and their differing reasons for "collecting, monitoring and analysing" Emergency Department quality measures (2011, 735). Donabedian's definition of types of indicator is considered in Cameron et al.'s research. Firstly, structure indicators represent physical facility, finances and staff consumption. Secondly, process indicators record elements of the patient's journey. Lastly, outcome indicators measure the final result to a patient's health from the intervention. The research suggests indicators based on "common" domains of quality derived from the literature, namely: safety, effectiveness, patient centeredness, timeliness, efficiency and equity (Cameron et al., 2011, 737).

Cameron et al. suggest a combination of indicator types concluding, more importantly, that indicators need to be set according to the "priorities of the institution" in order to stimulate improvement rather that allowing the measures to become "an outcome in themselves" (2011, 739). Because these indicators are locally developed they are not useful for national comparison (2011, 739).

2.3.2.5 Summary of Literature Review Relating to the Efficacy of the Enterprise Culture

The use of indicators developed through the Enterprise Culture for Emergency Departments has had a nationally positive, if not unstable and possibly unsustainable, effect on the outcome that policy is developed to achieve as well as unintended and

damaging consequences. The usefulness of indicators for holistic local improvement falls short of the recommendations defined in the literature and reviewed in the earlier part of chapter 2.

The results and consequences of the use of indicators under the Enterprise Culture reflect tensions on the capability of the people and process that must change in order to meet them. These tensions and the gaps in the characteristic identified between the English NHS and the best enterprises are discussed in the next section.

2.3.3 Enterprise Best Practice

2.3.3.1 Purpose, Process and People: the Conceptual Framework of Enterprise Improvement in the English NHS

This section discusses how Purpose, Process and People (PPP), a conceptual underpinning of enterprise performance and efficiency improvement and the associated best use of indicators as a tool to achieve them, are represented within the English NHS and its implementation of the Enterprise Culture. The findings are related to those used by successful enterprises through interviews with experts who have worked in both enterprise and health care quality and efficiency improvement. The conclusions will form part of the ethnographic research with the intention to test further gaps and particular issues for rural or remote hospitals.

2.3.3.2 Lean and the Purpose, Process and People Framework Characteristics

Womack, as noted in part one of chapter 2, argues that successful enterprises improvements come from a pathway of clear (quantified) purpose, robust processes and capable, empowered people, the PPP framework common to innovative enterprises (2011).

The PPP framework is derived from Lean production, a concept investigated and named by Womack, Jones and Roos, following their research into why Japanese car manufacturers had achieved significant global dominance through efficiency and quality, and published in the seminal work published in 1990 - 'The Machine That Changed The World'.

Lean production is so named as it follows the opposite principles to mass production (Womack et al., 2007, 2). References and comparisons to Taylor and Ford, two pioneers

of mass production, in the English NHS's adoption of the Enterprise Culture suggest a significant gap from lean techniques as a best practice. Lean techniques started to be developed in post-war Japan when the Toyota motor company began rebuilding itself after suffering from poor management, mass employee dismissals, a militant workforce and a broken national economy (Womack et al., 2007, 47-67). Progress was made by development of a system that addresses:

- The design of the product or service
- The supply system for the product or service (balancing supply and demand)
- The place of production or provision
- The characteristics of the customer using the product or service

This whole system of producing quality and efficiency is supported, not controlled, by a finance and management structure. To generate quality and efficiency improvement it is stressed "that problem solving is the most important part of any job" (Womack et al. 2007, 204). All managers are expected to work "on the shop floor", rotating through design, supply, production and customer relations because they believe that "the point of production where value is truly added" and leads to a culture where a managers' role is to teach empowered workers to solve "increasingly challenging problems" (Womack et al. 2007, 204). However Womack et al. emphasise, in an afterword in the 2007 publication, that problem solving is the last portion of the lean system to be implemented and must follow the introduction of well-defined and managed standard processes (2007, 290).

This systemic view is designed to generate efficiency through quality improvement (Womack et al., 2007, 73), which is the best practice underpinning the Enterprise Culture within health care. This (Lean) system was adopted by other Japanese manufacturers and later, through the work of Womack, Jones and Roos, by many other nations and industries (2007, 67-69).

Womack's method of applying Lean techniques is examination of first purpose, then process and finally people. In a publication for a conference for health care improvement, Womack states that all value (achievement of purpose) "is the result of a

process" which should be the focus of managers' attention (2005, 3). The efficiencies of a Lean enterprise can only come from a process where purpose is clear and an organisation must "accurately specify the value desired by the customer" (Womack, 2005, 3). Another key element of designing a robust process is "the actions in the process are satisfying for people to perform, managers to manage, and customers (patients) to experience' adding that "putting good people in a bad process is the best way to produce 'bad' people" (Womack, 2005, 9).

Advising health care leaders on how to implement PPP, Womack observes that organisations are often not structured to meet process perfection. Most organisations are vertically structured, in departments with a responsible manager, but that processes flow horizontally, towards the patient (2005, 17). Furthermore, the measurement and indication of performance use metrics "inconsistent with a perfect process" such as asset utilisation (Womack, 2005, 17). To overcome these organisational issues and become a Lean health care enterprise Womack suggests matching the organisation to the process and Identifying and empowering a process owner to manage value horizontally across the process (2005).

Using PPP as an enterprise tool to create customer value and competitive advantage means developing a robust organisational framework. This framework includes a clearly defined purpose to meet customer value, the standardisation of a systemic and horizontal process through the organisation and management capable of mentorship and problem solving.

2.3.3.3 English NHS: Cultural Reflections on Purpose, Process and People

Health care has faced criticism for its poor capacity to undertake changes which lead to improved safe, reliable outcomes (its purpose) which Frankel et al. argue is a result of differences in the characteristics of health care organisations and those of high reliability industries (2006, 1690-91).

The first characteristic identified is the people and process based element of organisational culture where the NHS "anomie" of underpowered and organisationally restricted people do not think in terms of process or systems (O'Regan, 2006, 123). However Frankel et al., like Womack, believe that leaders drive values, values drive

behaviours and behaviours drive performance and also deem culture to be the product of collective behaviours (2006, 1707). The reality of O'Regan's findings presents a clear difference in the organisational culture characteristic between health care organisations and high reliability industries.

Organisations are "as willing to expose areas of weakness as they are display areas of excellence" (Frankel et al., 2006, 1692). Frankel et al. propose a culture which produces accountable and empowered staff whose experience is respected regardless of experience (2006, 1692). This, Frankel et al. argue, leads to good performance (2006, 1707). Creating this culture needs firm leadership to acknowledge performance gaps and then be held to account for, and be capable of, closing them (Frankel et al., 2006, 1706-1707). The weaknesses of the NHS culture, leadership and respecting, and listening to, staff and the prevalence of fear and suspicion (noted earlier in the chapter) were key criticisms of the failings in safe health care and the tragic outcomes (high mortality rates) found in the public inquiry, chaired by Robert Francis QC, into the Mid-Staffordshire NHS Foundation Trust's performance failings (Public Inquiry, 2013). One unintended result of the introduction of internal markets and a drive for efficiency through the Enterprise Culture is the inability of people to change process and meet local need (purpose). The drive for efficiency pitches one health care Trust against another creating internal service rivalry which "led to a reinforcement of clinical empires and ring fencing of departmental boundaries" (O'Regan, 2006, 123). O'Regan argues that such "strong vertical lines demarcating roles and the provision of services" (2006, 123) produces differentiation which, with centralised command and control, focusses "all the attention on externally imposed targets" meaning that "little thought is given to the internal needs of the organisation" (2006, 124). System and process thinking are missing from the NHS Enterprise Culture because of a professional workforce is alienated by the command and control and managerial issues detailed earlier in the chapter, functional silos caused by demarcation and professionals who lack autonomy to make change (O'Regan, 2006, 126-127).

Pronovost et al. also consider the relationship between people and process in delivering safe health care and recommend that a framework that encompasses organisational culture by targeting senior managers, team leaders and front line staff by educating them in facilitating change management and standardised operations, or processes

(2006, 1612). The shortcomings of most individual hospitals, Pronovost et al. argue, is the limited resources that would not be sufficient to develop measures and the data collection necessary to fulfil the framework and so suggest that it should be implemented across a consortium of hospitals such as the NHS (2006, 1612). However, this centralised approach to change management and process frameworks bears the same limitations and the centralised approach to targets and indicators and still misses the local defects and systems which cause quality issues (O'Regan, 2006; Hunter, 2003, 101-136) identified in the Francis report (Public Inquiry, 2013). Furthermore, Worthington considers that a "combined force of opposition to change, clinicians' traditional professional autonomy and their attachment" to elite professional status within the NHS causes a continued problem for change managers (2004, 65). Running NHS Trusts "as a business" striving for integration and standardisation and adopting audit, check, countercheck and regulation of clinical guidelines stifles innovation (O'Regan, 2006, 123-126); although this perception of enterprise does not follow the purpose, process, people framework of best practice that Womack describes. A further characteristic of health care culture that causes unreliable, unsafe outcomes is the constant of change which induces anxiety in staff (Walsh et al., 2011, 206). Constant change reflects historic failures and similar solutions repeatedly applied, divisions between levels of staff and a workforce that is not always conscious of the rational perspective of change (Walsh et al., 2011, 210).

2.3.3.4 Process Complexity

As discussed in part one of chapter 2, process complexity and insufficient time to implement change are common factors in public sector organisations that may lead to undesirable results (Hunter, 2003, 126-136). Also as noted, policy ensures that public sector responses to complex problems are complex answers (Hunter, 2003, 162-164). O'Regan states that current vertical functional rigidity of health care organisations does not allow for systems thinking, a term meaning the review how independent functions within a system influence each other holistically (2006, 126). Rigid, complex and vertical organisations and processes do not encourage the systemic solutions that Womack et al. advise. Allder et al. illustrate the example of process complexity and rigid organisation through research into bed availability and patient flow through hospitals (2010). The authors argue that complexities of bed availability is not resolved by adding

more beds, which just adds more complexity to the system, but by taking a system perspective to understand that different patient dynamics and to smooth predictable but varied demand that the process amplifies as the patient moves through the hospital departments (Allder et al., 2010, 14-15). Process complexity and a lack of system thinking is encouraged through command and control, such as National Institute for Health and Care Excellence who "monitor, evaluate and set down clinical guidelines" (O'Regan, 2006, 124).

In addition to process complexity, the design and application of the process to meet user demand, a key criterion of lean and system thinking, must be considered. Silvester et al. ask if "increasing capacity [is] a prerequisite to local organisations achieving and sustaining performance at the level of access targets" (2004, 105)? In conclusion to their study, Silvester states that the "majority" of capacity plans in the NHS are based on historic average and do not account for variation in demand or capacity which inevitably causes variation, and queues (2006) which Lean thinking is designed to eradicate (Silvester et al., 2004, 105).

As concluded in the previous section, the English NHS has an abundance of centralised targets and indicators which are not appropriate for local decision making and are limited in their ability to meet a defined outcome purpose. Processes for the targets and indicators are similarly centralised and do not address local deficiencies and the challenges from the cultural aspects identified above describe how the 'People' element influence outcomes.

In the previous sections, the use of indicators as a local improvement tool and their link to purpose are explained. This section has reviewed the process and people in the context of purpose and explores the reasons for behavioural differences between the NHS and enterprise in successfully achieving purpose.

The NHS, despite advancing with a competitive means of achieving efficiency through the implementation of the Enterprise Culture, does not appear prepared in terms of enterprise's best practice framework. In place of the desired purpose-driven horizontal, systemic process we find rigid, vertical functions monitored externally and managed by un-empowered management.

The next section will conclude with interviews with experts who have made the transition between enterprise best practice and health care improvement to review the findings of the literature and identify key considerations when developing the methodology.

2.3.3.5 Achieving Enterprise Success in the English NHS: An Evaluation with Experts

This boxed text in this section describes a series of conversations with experts in innovation and efficiency improvements in health care.

Following their seminal work with the Massachusetts Institute of Technology, Professors Womack and Jones developed the Lean Enterprise Institute and Lean Enterprise Academy respectively. These non-profit education and research organisations have led advancement of lean techniques into health care.

To evaluate the findings of the literature reviews and to present useful conclusions for the methodology and research, a series of discussions were conducted with two former engineers who have become senior faculty members of the Lean Enterprise Academy and have led improvement in healthcare across health systems in Europe. The evaluation confirms the importance of purpose, process and people in enterprise success and a major failing of NHS change and measurement systems. The key themes that these two experts commonly encounter in the NHS are discussed below.

Because of the horizontal structure of NHS organisations, value is rarely defined properly, if at all. This is because systemic value, towards the patient, cannot be seen and short term targets held by each manager are the only visible measure of value. For example, a manager of a porter facility may have a target to cut costs and will only be able to do this through personnel reduction. This happens and the value stream (the process giving value to the patient) is interrupted because patients have to queue to go be admitted, go to diagnostic, discharge lounge, etc. This leads to variation being amplified and poor use of clinical time because patients are batched up and arrive at the clinical space in large numbers instead of in a manageable stream. This leads to another observation: finance departments have considerably more influence in health care than in the leading enterprise organisations. Finance departments in health care set the budgets in the functions and design cost improvement plans for each function

independently. The systems of delivering value are not considered at all which leads to poor management decisions such as the one illustrated above. Finance is a support function in enterprise, not a control. Some of the accounting techniques also seem to be significantly behind the enterprise expectations. When exploring finances in NHS organisations, finance staff refer to stock as an asset because 'we paid for it'. However, when considering the treatment of stock, how long it remains unused, that lack of control over its purchase, deliver and use, and the significant amounts discarded, the enterprise thinking considers the treatment of stock a considerable liability.

Another finding of the evaluation is that responses and reactions implemented by health care organisations to resolve quality failures continuously add complexity to the system. Examples discussed are:

- Adding a quality assurance check at the end of the process instead of resolving the cause of the quality issue. Checking often fails because staff undertaking the checks are poorly trained and the standards for the process are unclear. This leads to a further potential to reduce the quality of the system which creates less value for the system (the NHS is paying for a member of, often clinical, staff to perform an action that detracts quality from the patient).

- The implementation of a new management or governance body which may employ some of the best staff in the value adding process as well as moving value further away from the patient. These bodies seek to manage a programme of mostly financially driven, improvements but often reinforce the horizontal functions and not the inefficiencies in the system.

Clearly defining the purpose in order to focus improvement is agreed as essential, however, because of the horizontal functions within the NHS and the inability of most systems to assign one owner to the system, it is necessary to experiment with change in a carefully defined area with a willing clinical lead and prove the concept to other clinicians and managers. Then improvement projects should consider how to achieve the solution. For example, to achieve the Emergency Department 4 hour targets considerable effort is given by hospitals to make capacity more efficient however, when

viewed in terms of Little's Law, this is only half of the possible equation. Little's Law applied to queuing in hospitals states that:

$$Average\ time\ in\ department = \frac{patients\ in\ department}{productivity\ rate}$$

So if there are one hundred patients in an Emergency Department which is working at a rate of discharging twenty patients per hour the average time in department is five hours. Trying to adjust the productivity rate will affect quality, balancing the flow of patient demand to eighty patients would achieve the four hour target. This level of thinking is not common in the NHS because, the experts believe:

a) Managers are not trained to think that way and are therefore often not skilled or capable

b) There is an underlying NHS behaviour that looks to productivity for improvement and does not believe that it is possible to make changes to demand: 'we can't buffer patients like car parts'.

The behavioural problem is deemed a significant factor in implementing Enterprise Culture change in the NHS. Clinical Consultant influence and departmental management, as well as powerful support services such as finance functions add delay to implementation and reduce the efficacy of improvements. Also instigating improvement is often a process of negotiation to gain enough support make change. Interestingly, the behavioural issues, defining standardisation and educating managers can be addressed using techniques introduced by the Training Within Industry (TWI) effort, introduced by the United States Department of War to improve efficiency during the World War II. Job Description (JD) and Job Instruction (JI) ensure that all actors in a process understand the purpose of the work, the standard way of achieving it and the skill to instruct others in how to become capable of working in the process.

The above evaluation confirms the findings of the literature review and provides useful reflections to consider in the ethnographic study.

2.3.3.6 Summary of Enterprise Best Practice

NHS Enterprise Culture does not replicate the successes of enterprise because of the differences between the NHS centralisation of targets and processes compared with the decentralised PPP approach of leading private sector organisations. The culture of fear and suspicion is not present in best enterprises because indicators are used for feedback for improvement through structured management and an empowered workforce (not to manage the poorly performing). Metrics show the potential and improvement is delivered through an experiment to change.

Command and control misses the key point of enterprise benefits: the need for capable management to define customer purpose, standardise processes and allow people to understand and fix the local complexities in order to achieve improvement and competitive efficiency.

2.3.4 Conclusion to Part Two of the Literature Review

The mandatory indicators that the DH uses to assess performance in English Emergency Department and which will be inherent in emergency care systems evaluated in this research have been described so far in this text. These indicators are intended to measure health outcomes and which will stimulate innovation and competition within the NHS and provide information for patient choice. They purposefully move away from process based measures and do not respond to the arguments for locally based indicators for internal improvement described in this chapter. Nor does the DH emphasise the other organisational characteristics that successful enterprises use with indicators to achieve successful outcomes. Despite the DH rhetoric for improved innovation and better patient choice, concern is expressed that pressure from regulators will represent more performance management.

The literature suggests that implementation of market systems and command and control techniques using inappropriate, centralised indicators through decentralised, unpowered managers has not achieved the sustained benefits expected in the policy. This is because the conceptual framework of enterprise efficiency has not been applied or, perhaps, fully understood. In the NHS culture, suspicion and fear replace the innovation and opportunity that indicators present to the Enterprise culture, as the tragic events described in the Francis report attest.

2.3.5 Developing the Research Rationale and Refining the Research Questions

Findings from the literature review to be considered in developing the theoretical framework for the study are:

a) The behavioural aspects of staff in Emergency Departments and wider health care organisations

b) The impact of functional and structural influences in health care organisations

c) Management and non-clinical or support service influences and controls on the system of work

d) The skills and improvement framework and preparation for change present in the Emergency Department

e) Identifying the local purposes (needs) and complexities and purpose, process and people characteristics

The study began with the proposal to understand the extent to which the four hour wait target would affect the performance and needs of the local emergency care system. However, the findings of the literature reviews revealed that targets and indicators are components of the wider Enterprise Culture policy to adopt successes seen in private sector best practice.

The limitations of the prevalent Enterprise Culture in providing an organisational framework capable of achieving policy were exposed and, as a result, more specific aims emerged.

Following the literature review, the rationale for the study was to understand the extent to which the Enterprise Culture in the NHS provides an organisational framework capable of achieving current NHS policy. The aims of the study are to understand:

1. The dynamics, capacity and capability of the Emergency Department service; in particular how the presence of the Enterprise Culture affects Emergency Department performance.

2. The demand from emergency care service users who present to a rural Emergency Department. This includes assessing how much control the Emergency Department had over demand for its service and what alternative emergency care services exist. Demand characteristics, patient demographics and acuteness, and the stochastic nature or arrival patterns required scrutiny.

3. What capacity does the Emergency Department need in order to fulfil its role in providing an emergency care service? Identification of the gaps between the current Emergency Department system and the Purpose Process People (PPP) framework in order to realise the benefits identified in the literature review was also necessary. What characteristics of the Emergency Department system would need to be changed and could this be achieved?

At the initial proposal stage of the study, the research question was; 'how have needs-led indicators been developed, what are they, to what extent are they implemented and do they lead to improvements in service delivery and quality of care in Emergency Departments in District General Hospitals?'.

However, following the refinement of study rationale and the aims identified above and the development of a testable theory, this evolved into the following, specific questions:

1. What is the nature of the emergency service users' demand?

2. What characteristics of the Enterprise Culture exist in the Emergency Departments and what are their effects on performance against the four-hour wait target?

3. Hypothesis: the private enterprise framework adopted by the Emergency Department is successful in achieving the aims of the Enterprise Culture.

4. How can the private enterprise best practice framework or other best practice method be introduced to meet the needs of the local emergency care system?

The following chapter discusses the methodological theories, conceptual framework underpinning the research and the aims and research questions developed in this thesis.

3 Methodology: Research Philosophy, Theoretical Framework and Strategy

3.1 Philosophical Considerations for the Research

This section discusses and justifies the ontological and epistemological stances based on the findings from the literature review and outlines the importance of considering the researcher's ontological and epistemological stances. Justification of the ontological and epistemological stance adopted in the research is then presented

3.1.1 Ontology

Ontology is the science or study of being, although Crotty debates the wider philosophical meaning attributed to the science, citing views from the literature that ontology can describe the assumptions that research makes about the nature of reality in social structures (1998). Although Crotty believes this is helpful in "dealing with ontological issues as they emerge without expanding our [epistemological] schema to include ontology", he believes that the term is best used "when we do need to talk about being" (1998, 11), a definition adopted in this research.

Snape and Spencer consider that one of the social researcher's "key ontological debates surrounds whether there is a captive social reality and how it should be constructed" (2003, 11). This leads to their definition of three "broad" ontological stances: realism, materialism and idealism (Snape and Spencer, 2003, 11).

1. A realist position considers that reality exists independently of our beliefs and understanding, or how people perceive the world. There is a distinction between the reality of the world and the meaning given to it by individuals' perceptions.

2. Materialists consider that reality exists independently of our beliefs and understanding, but that only the material or physical world is real. Individuals' values and beliefs arise from but do not shape the world.

3. Idealists take the view that no reality exists independently of our beliefs and understanding, or that the world exists only as people perceive it.

The literature describes a multifarious system of rigid organisational structures and rules and complex social and relational phenomena which together produce a varied level of output when viewed through performance indicators (Turner et al., 2013a; 2013b). This presents the researcher with an environment where the ontological assumptions made to "talk about being" (Crotty, 1998, 11) need to consider two distinct causal features when examining their relationship with the effect on performance: organisation structure and social nature.

3.1.1.1 Realism

Toyota, the pioneering organisation that led Womack et al.'s seminal work on the successful private organisation's use of efficiency and effectiveness techniques which the Enterprise Culture looks to reproduce, has a maxim of achieving excellent quality in purpose through people striving for a perfect process (2007). A former Toyota Chairman, Fujio Cho, stated that "We get brilliant results from average people managing brilliant processes, while our competitors get average or worse results from brilliant people managing broken processes" (Chartered Quality Institute, 2013). Also, the process and organisational structures within the Enterprise Culture have an objective causal relationship with performance outcomes (Turner et al., 2013b). These conclusions tend towards the realist assumption; of distinction between the reality of the world and the meaning given to it by individual perceptions (Snape and Spencer, 2003, 11).

However, many of the potential causes of the health care performance issues identified in the literature are not derived from a typical realist view. Social structures and interaction and the 'average person' depicted by Toyota are complex and hard or impossible to measure. For this reason these aspects are often omitted from a realist model, however such factors "can always be quantified" and represented in a mathematical or statistical model (Richmond, 2004, 31). Although the social aspects are often omitted from a realist model these complex beliefs and tensions are critical and do need to be investigated in order to "address research questions that require explanation or understand social phenomena in their social contexts" (Snape and Spencer, 2003, 5).

3.1.1.2 Idealism

I am drawn to the realist position because of my background as a statistical engineer where laws and models are created to identify causes of outcome variation to "drive improvement" (Hoerl and Snee, 2010, 121). However the adoption of an idealist aspect, and thus a rejection of the pure materialist approach, must recognise the weight and complex nature of the social tensions. An ontological position is necessary to understand the systemic and social complexities, explain their influence and resulting variance shown in performance outcomes, contribute to the model build and enable intervention in terms of a realist framework, which enterprise best practice and the Department of Health (DH) use to some extent. Hoerl and Snee argue that the development of statistical engineering and statistical science represents a paradigm shift towards offering academic research a discipline to "promote deeper thought about the context of the data and about the processes that produced that data" (2010, 121-124). This shift (from statistics as a pure science to a paradigm combining pure science and engineering science which produces "a body of knowledge and teaching curricula") enables an academic approach to address unsolved problems of older paradigms "based on societies needs at this time" (Hoerl and Snee, 2010, 124-128).

The research takes the ontological view that reality within the Enterprise Culture is created through a function of complex social structures and the existence of a reality that is influenced by organisational laws and models. The ontological stance selected is a position between the realist and idealist extremes, adopting the critical realism position.

Critical realism allows researchers to "explain the mechanisms that influence information seeking, not only on an empirical level, but also by revealing possible underlying causes and relations" (Wikgren, 2005, 11). DeForge and Shaw add that the essence of critical realism is uncovering the underlying generative (causal) mechanisms (the interplay of conditions) "that give rise to the demi-regularities we observe and experience daily" (2012, 85).

3.1.2 Epistemology

Epistemology concerns the study of knowledge. The researcher must consider the theory of knowledge and have faith in the "truth, or validity of that knowledge", acknowledging that different epistemological assumptions lead to different research techniques and questions and ultimately different ways of "knowing the world" (Green and Thorogood, 2004, 10).

Snape and Spencer describe two epistemological stances for how a researcher to might come to "know about the world" (2003, 16):

- Positivism assumes that "the world is independent of and unaffected by the researcher" and that quantitative research techniques are appropriate to social research "because human behaviour is governed by law-like regularities" (Snape and Spencer 2003, 16).

- Interpretivism assumes that human behaviour is not governed in such a way and that the researcher must understand social structures in a qualitative way, using the "participant's and the researcher's understanding" (Snape and Spencer 2003, 16).

Green and Thorogood add a second "qualitative tradition", constructivism, which looks to understand how social processes construct phenomena (2004, 13).

A positivist approach views knowledge of social reality as a "stable reality which can be studied within scientific implications, namely, empiricism, unity of method and value-free enquiry" (Green and Thorogood, 2004, 12). Although it views human behaviour through scientific implication, positivism is criticised for its lack of regard for human individuality implying that human behaviour is passive or controlled by "law-like ways" (Green and Thorogood, 2004, 12-25). Turner et al., describe evidence of such law-like ways and structures within the Enterprise Culture but also criticise its ability to produce expected results because of the influence of complex social interactions which are difficult to appraise objectively (2013 b).

The view that such an objective stance should be replaced by subjectivity led to the qualitative paradigms where social reality is viewed through interpretation of the

meaning of processes and individuals or is constructed by society (Green and Thorogood, 2004). The interpretivist view that reality is complex, unpredictable and not suitable for objective study and that an outcome has many interlinked causal factors is also deemed necessary to produce a fuller understanding of cause and effect (Green and Thorogood, 2004, 12-25). Although qualitative paradigms overcome concerns about studying social structures through objective science, qualitative techniques are criticised because of the nature of subjectivity and meaning. Snape and Spencer note fears that "no definitive account or explanation" can be produced from qualitative research (2003, 9).

The epistemological stance selected within this thesis follows the ontological position where a quantified, positivist approach is deemed necessary to fit understanding and intervention to an improvement framework, but which relies heavily on an interpretative approach to identify the social tensions and construct them into the framework. This leaves an epistemology in the middle of the positivist and interpretivist poles which allows critical realism to appreciate and value "context-specific conditions" (DeForge and Shaw, 2012, 85).

3.2 Theoretical Framework

3.2.1 Research Scope

The key points identified from the literature review define an Enterprise Culture in which centralised targets are a predominant factor in the health policy attempt to adopt the efficiency improvements seen in the private sector. However, efficiency is seen to be generated through decentralised, local autonomy, greater management skills and fewer targets rather than central command and control (Turner et al., 2013a). The capability of management within the rigid organisation structure of the English NHS and the centralisation of targets and culture of fear affect the ability of the Enterprise Culture to achieve the policy aims and sustained target achievement (Turner et al., 2013b).

Although the DH move from measuring processes to measuring outcomes in Emergency Departments' performance has resulted in new indicators being used within the Enterprise Culture, it does not address the issues for locally derived indicators to gain the overall policy expectation of efficiency. Furthermore, the damaging consequences

noted in chapter 3 suggest that the application of indicators within the Enterprise Culture - in Emergency Departments in the English NHS - represent a deviation from the PPP framework which can be researched in a contained area. This thesis focuses on the application of the Enterprise Culture within Emergency Department care in the English NHS.

3.2.2 Choice of Paradigm

Morgan discusses paradigms as a central concept in social science research but describes the multiple meanings that have developed when using the word for research purposes (2007, 49). The widespread use of paradigms in social science, Morgan argues, "emphasise metaphysical issues related to the nature and reality of truth" in order to summarise the researchers' ontological and epistemological beliefs about creating knowledge (2007, 49). However, Morgan argues for an alternative version to paradigms in which a system of beliefs and practices influence the selection of research methods and questions: the pragmatic approach (2007, 49). Although the term 'paradigm' is used throughout this thesis and the associated publications, the definition for its application in this research adopts Morgan's view of a pragmatic summary of its efforts to define the research methodology to consider the social complexities and organisational structures identified in the literature (2007).

In defining the paradigm, consideration is given to the nature of the social phenomena studied and addressed in the ontological and epistemological stance. Although the Enterprise Culture relies on an objective regime (the command and control structure described in the literature) and would expect such models as managerial and target frameworks to deliver results, the findings from the literature review also reveal a complex, human behaviour which I have argued is suitable for interpretative study. Furthermore, the base of knowledge required to make an intervention towards enterprise best practice relies on an understanding of the complexities of purpose, process and people (Turner et al., 2014). This knowledge is determined from an interpretive study of individuals and the environment or system.

The review of ontology and epistemology has led to the research being based on a paradigm comprising a combination of qualitative and quantitative methods to meet the stance between realism and idealism, positivism and interpretivism.

The above paradigm is selected to balance the risk of uncontrolled or unidentified study of causal variables from qualitative stances and the risk of reliance on statistical testing to define and progress scientific research (Kaplan and Duchon, 1988, 572).

3.2.3 Research Aims

The study began with the proposal to understand the extent to which the four hour wait target would affect the performance and needs of the local emergency care system. However, the findings of the literature review revealed that targets and indicators are components of the wider Enterprise Culture policy to adopt successes seen in private sector best practice (Turner et al., 2013a; 2013b). The limitations of the Enterprise Culture's ability to provide an organisational framework capable of achieving policy were exposed and, as a result, more specific aims emerged.

The study aims to conduct research into effectiveness and efficiency in the Emergency Department of a rural hospital using a mixed methods approach which to create a framework for intervention (Turner et al., 2014).

Following the literature review, the rationale for the study was to understand:

1. The dynamics, capacity and capability of the Emergency Department service; in particular how the presence of the Enterprise Culture affects Emergency Department performance.

2. The demand from emergency care service users who present to a rural Emergency Department. This includes assessing how much control the Emergency Department had over demand for its service and what alternative emergency care services exist. Demand characteristics, patient demographics and acuteness, and the stochastic nature or arrival patterns required scrutiny.

3. What capacity does the Emergency Department need in order to fulfil its role in providing an emergency care service? Identification of the gaps between the current Emergency Department system and the Purpose Process People (PPP) framework in order to realise the benefits identified in the literature review was also necessary. What characteristics of the Emergency Department system would need to be changed and could this be achieved?

In developing and defining a theory to test, the complexity of the adaptive nature of the Emergency Department system was examined as part of the performance cause and effect relationship. The theory was developed to support the pragmatic paradigm and ontological and epistemological positions discussed earlier in the chapter.

3.2.4 Theory

In a quantitative study, a theory is typically developed deductively as a framework to generate research questions and hypotheses by which to confirm or refute its validity (Creswell, 1994, 87). In qualitative studies, a theory emerges though an inductive approach of data collection and analysis, and comparison to other theories (Creswell, 1994, 94).

Anderson et al. argue that the unsuccessful adoption of Enterprise Culture practices in health care is because "a system can be understood only as an integrated whole" (2005, 672). Because health care organisations are complex adaptive systems, Anderson et al. justify the application of complexity theory to examine the relationships of the component parts (2005, 672) since complexity theories assume that "employees work in a common direction through self-control" (2005, 671). The character of complex systems, Byrne and Callaghan argue, is the consequence of interactions within the system and with other systems with which it intersects (2014, 173). The systems created by the Enterprise Culture are heavily influenced by such interactions, making complexity theory a compelling approach (Turner et al., 2014).

Complexity theory is a framework for understanding which Byrne and Callaghan define as an ontological position of complex realism, based on a "synthesis" (2014, 8) of the critical realism stance adopted in this research. Byrne and Callaghan state that although this framework of understanding is more than a theory of causation, it can be used as such or can be used to generate theories of causation.

This tension between a deductive theory, derived to test a robust framework, and an inductive theory developed from understanding the self-control of the workforce is inescapable in this mixed method study. However, both framework and people are essential aspects of private enterprise success.

It is accepted that examining the complex adaptive health care workforce is necessary – as this complexity represents a potential cause of poor performance improvement in the English National Health Service (NHS). However the literature review leads to the deductive reasoning that the Enterprise Culture is not reproducing performance improvement in the NHS because the Enterprise Culture framework is very different from that in private sector best practice (Turner et al., 2013a; Turner et al., 2013b). The operational activities enacted by the NHS workforce cannot lead to positive results if the framework to empower the staff to a common purpose (or direction) is not in place.

This research accepts the complexity of the Enterprise Culture within emergency care systems and uses a deductive approach to develop the theoretical underpinning to challenge and test if the Enterprise Culture has provided a framework for performance improvement in a rural District General Hospital (DGH).

3.2.5 Research Questions

At the proposal stage of the study, the research question was; 'how have needs-led indicators been developed, what are they, to what extent are they implemented and do they lead to improvements in service delivery and quality of care in Emergency Departments in District General Hospitals?'.

However, following the refinement of study rationale and the aims identified above and the development of a testable theory, this evolved into the following, specific questions:

1. What is the nature of the emergency service users' demand?

2. What characteristics of the Enterprise Culture exist in the Emergency Departments and what are their effects on performance against the four-hour wait target?

3. Hypothesis: the private enterprise framework adopted by the Emergency Department is successful in achieving the aims of the Enterprise Culture.

4. How can the private enterprise best practice framework or other best practice method be introduced to meet the needs of the local emergency care system?

Although Keogh acknowledges the breadth of emergency care, which covers a wide spectrum of needs from advice for self-care-help to major trauma cases (Public Inquiry, 2013, 12), this research primarily focuses on care provided in the DGH Emergency Department.

Essential to answering these questions, however, is the whole system perspective that is central to the PPP framework, described in chapter 2, and central to complexity theory. This means gaining an understanding of social perspectives, capacity and demand data, organisational and management controls and resource characteristics. A mixed qualitative and quantitative approach is needed to achieve this. Although archival quantitative data are available from a variety of sources, they carry the risks of error that are seen in the literature: researchers must "be careful to ascertain the conditions under which [the evidence] was produced as well as its accuracy" (Yin, 2014, 109). Therefore critical evaluation from observation of how the system works is also necessary as well as scrutiny of how data are measured and recorded for publication in order to assess systemic performance.

3.2.6 Research Strategy

3.2.7 Mixed Methods

To test the theory and address the research questions, this mixed method study is designed to use qualitative data to provide "meaningful social context" (Bowling, 2009, 381) to quantitative data to fulfil the paradigm justified in this research. Morgan argues for the pragmatic approach of knowledge produced from movement back and forth between qualitative and quantitative research in order to "search for useful points of connection" rather than base knowledge on "wholly incompatible assumptions" from distinct use of the two approaches (2007, 71).

Mixed method research combines at least one method from both qualitative and quantitative techniques (Simons and Lathlean, 2010). Mixing methods is argued as useful "to account for, and reflect on, the increasing complexity of contemporary understandings of health and health care" because health care is delivered through multidisciplinary teams that have multiple sources of knowledge which can only be studied using more than one research method (Simons and Lathlean, 2010, 332). Critics of mixed methods consider that the "nature of reality and truth is different in each

paradigm" because complex meanings from qualitative approaches generate multiple truths but quantitative objectivity is measured at one point (Simons and Lathlean, 2010, 333). However, Tashakkori and Teddlie state that the research question and not the paradigm should dictate the research method, but draw attention to logic of the combination and sequence of the methods used which should be informed not only through the research question but also the researcher's "epistemological commitment and ontological views" (1998, 20-39).

Mixed method studies have compelling features which are appropriate for answering the research question of this thesis. Purposes for using mixed methods include triangulation and facilitation. Triangulation – using three or more methods to verify findings by "independent sources" (Bowling, 2009, 392) – will help to understand the Emergency Department needs from the different perspectives of the multiple teams engaged in such a department. Facilitation, taking findings from one method to inform subsequent stages of the research, enables improvements to be designed within the context of earlier findings (Tashakkori and Teddlie, 1998). In this research observations and numerical and categorical data about Emergency Department systems will be used as a basis for gaining consensus of the system's needs and then statistical testing will be used to challenge how successful needs-led changes would be.

Parts of the research are interpretive in nature but quantitative methods are used for reasons of triangulation and facilitation. Additionally, quantitative methods allow judgements and intervention to be made within a system framework and the numerical analysis to enable the research questions to be answered. The logic and sequence of mixing the methods is discussed in chapter 5. The knowledge which will result from this research will be a quantified assessment of how the mandatory indicators, and the emergency care systems enacted to achieve them, meet the needs of a DGH Emergency Department and a review of the efficacy of system changes made to achieve needs-led indicators defined by local emergency care actors. An examination of the replication of these findings across DGHs is made in chapter 9.

3.2.8 Combining Methods

This section addresses the evolution of combining methods and their use in this research. In 1994 Creswell first defined three models of combining quantitative and

qualitative paradigms (Creswell, 1994, 177). The two-phase design undertakes both paradigms in separate phases and allows assumptions to be drawn from each. The dominant – less dominant design "presents the study within a single dominant paradigm" with the other contributing a smaller component. The mixed methodology design mixes the paradigms at "all or many of the methodological steps" (Creswell, 1994, 177). However, Tashakkori and Teddlie consider Creswell's initial classification of mixed methodology design belongs to an earlier step in the evolution of combining studies (1998, 15-53). As the qualitative-quantitative distinction is wider than applying both aspects to one study, Tashakkori and Teddlie argue that the next step is "mixing models" (in which qualitative and quantitative paradigms are mixed within stages of the study) which "more accurately reflects the research cycle" (1998, 52). Sandelowski develops this theme of classifying combined methods into usable research templates, noting that combined studies are not only mixtures of paradigms but of which techniques to combine them and how and why to combine them (2000, 247). This is because "methods, like paradigms are not specifically linked to techniques" (Sandelowski, 2000, 248).

This pragmatic approach assumes that researchers view the research question to be more important than the method or paradigm (Tashakkori and Teddlie, 1998). The breadth and combination of techniques available to the pragmatic approach offer the opportunity to "provide a fuller description of cases" and "guide purposeful sampling" (Sandelowski, 2000, 251-252).

Care must be taken not to abuse the 'limitless' possibilities of mixing so many available techniques. Although they may offer convergent validity and triangulation, without a "clear view of their viewing positions and what dynamic mixes they suggest or permit", researchers could lose the completeness they seek in their study (Sandelowski, 2000, 249-254).

The deductive theory for this study that was derived from the literature review suggests a dominant quantitative element, using less dominant qualitative techniques to develop a framework to explore the expected causal relationships. This study adopted a pragmatic selection based on the evolution of Creswell's work, which was guided through a dominant – less dominant design which aims to test the deductive theoretical

framework and resists the risk of unstructured research and that “more is better” (Sandelowski, 2000, 254).

3.2.9 Strategy for Social Research

Yin defines five strategies for social research: experiment, surveys, archival analysis, history and case studies. When selecting the most appropriate strategy, Yin argues that three criteria should be considered: the nature of research question to be answered; the amount of control the researcher has over the events studied and the contemporary or historic focus of the research (2014, 9-15).

Following Yin’s selection criteria, a case study approach was preferred over other social research strategies, as it is the only technique to fulfil all of the criteria. Firstly, the research questions aim to examine and understand the cause and effect relationship and social phenomena of the Enterprise Culture in Emergency Department performance. Yin argues that strategies appropriate to this type of explanatory research should focus on “operational links needing to be traced over time rather than frequencies or incidence”: the appropriate strategies for this type of research and theory include case studies, histories and experiments (2014, 10).

Cronin specifically argues that the case study researcher considers the context in which multiple perspectives happen in order to understand “the system being examined” (2014, 21). Anderson et al. believe case studies are valuable to examine a phenomenon systemically (2005). Additionally, human and group behaviour is difficult to capture in “manufactured” evidence from experimental investigations and surveys which can happen under “laboratory conditions; ill-suited to specificity of real-life phenomena” (Gillham, 2000, 4-6).

Secondly, this research aims to test a theory by understanding the application of the Enterprise Culture in the rural English NHS Emergency Department environment. No control is assumed by the researcher over the phenomena or cause and effect relationships studied in the research environment. This eliminates experimental studies where control is necessary (Yin, 2014, 12-13).

Finally, Yin argues that the strategy should consider whether the focus is on contemporary or historic phenomena (Yin, 2014, 12-13). As the research is

contemporary, a historical study is rejected and a case study approach is justified using Yin's selection criteria. Moreover, case studies offer the pragmatic researcher multiple sources of evidence which is a “major strength” of the strategy as they can be used to address a broader range of issues than strategies using single sources of evidence (Yin, 2014, 119). This range of sources, and available techniques to gather the evidence, enables study of the critical components and relations of a complex integrated system (Anderson et al., 2005; Bowling, 2009, 434). Additionally, multiple sources of evidence can be used for triangulation and validity of the research findings (Yin, 2014, 120) which is a key function of combining methods.

Anderson et al. conclude when justifying case studies for studying complex health care systems that “a key to knowing when to use a case study lies in the nature of the research process” rather than past work and knowledge (2005, 681). The nature of this research process demands a study environment where complex social structures can be examined alongside rigid organisational frameworks. A case study approach offers the ability to study these phenomena systemically (Anderson et al., 2005). For example, Mazzocato et al. adopted a mixed method, single case site approach to examine the intervention of private sector best practice inspired framework in a Swedish Emergency Department (2012). This research was designed to “track operational performance changes over time” and to “describe the intervention and to provide data to help explain how the intervention worked based on four theoretical PPP principles” in their aim to add to the knowledge of why such interventions succeed or fail (Mazzocato et al., 2012, 3).

Single case study sites are preferable to multiple sites in a number of situations, one of which is where the case is “critical” in testing existing theory (Yin, 2014, 51-56). A single case study site is selected because of the nature of the critical case being examined; that of an Emergency Department in a rural DGH with performance measures below expectations, which could “represent a significant contribution to knowledge and theory-building” (Yin, 2014, 51) for emergency care services in rural areas**.** The case study site selected was a District General Hospital (DGH) providing acute care to a market town in the East Midlands of England. This hospital was selected because of its characteristics as a DGH. The case site is situated 30 miles from the nearest DGH. It serves one administrative district of its county with a population of 64,600 (Office for

National Statistics, 2012) and other rural communities from the county and other parts of the region. Local commissioning Trusts are largely reliant on the case site for most of the acute services it provides because of the cost and inconvenience of sending patients to other local facilities. Within the context of the theoretical framework of the research this is an important factor as competition expectations from health policy are not so applicable to rural populations who have little access to alternative health care provision. As a result the public cannot chose a provider based on performance and comparison against its peers and the provider cannot focus on a specialising service delivery.

An analytical strategy is necessary to ensure sufficient presentation of collected evidence and consideration of any alternative interpretations (Yin, 2014, 133-136). Yin describes four general analytic strategies: one which relies on theoretical propositions; a second to develop a case description; a third to create concepts from data analysis and a fourth which examines rival explanations (2014, 136-142). This research uses the theoretical proposition strategy to study causal relationships adopting the "explanation building" mode of analysis to "stipulate a presumed set of causal links" (Yin, 2014, 147) necessary to test the theoretical proposition central to this study.

Quantitative analytical techniques are described in the method chapter to suit the data types and distributions from the data gathered in order to examine the causal links.

3.3 Conclusion

The rigid organisational structures and complex social and relational phenomena represent a research environment with aspects of reality both independent of, and heavily influenced by, human perception. By adopting a critical realist stance, the research seeks to examine the mechanisms of cause and effect. The examination follows a broadly positivist approach to create a framework for intervention, but which includes interpretive assumptions to reflect the social constructs inherent in the research environment. The ontological and epistemological stances are summarised in a pragmatic paradigm which supports the need to combine qualitative and quantitative research approaches to define the research questions and generate knowledge.

The study aims to conduct research into effectiveness and efficiency in the Emergency Department of a rural hospital using a mixed methods approach which to create a framework for intervention (Turner et al., 2014).

The next chapter justifies the methods selected to be applied in the methodology discussed in this chapter.

The work described in this chapter led to the publication of two papers which are found in appendix 8:

- The Efficacy of the Enterprise Culture in the English NHS was accepted by the British Journal of Healthcare Management in March 2014 (Turner et al., 2014).

- Combining Methods to Research an Emergency Department: a Case Study was accepted for publication in the British Journal of Healthcare Management in January 2015 (Turner et al., 2015a).

4 Methods

4.1 Introduction

This chapter details protocol development and adherence, methods of data collection and analysis from the case study site to test the theory and address the research questions developed in the previous chapter. The study was designed in three stages:

- The **examination of the current state**, which looked to understand the Enterprise Culture in place at the case study site, described in section 4.2.
- The **implementation of the intervention**, which recorded the implementation of an improvement designed within the Enterprise Culture, described in section 4.3.
- The **evaluation of the intervention**, which examined the efficacy of the intervention in achieving Enterprise Culture policy aims, described in section 4.4.

The protocol described below was issued at the time of application for ethical approval. However, changes to the case site management structure, unavailability of some participants and reaction to findings from preceding stages in the study required some adjustment to the planned research and the changes and actual methods used are described in this chapter.

<u>Planned Research Protocol</u>

1. Using an ethnographic study method, the Emergency Department processes and systems of work will be investigated. This research will study the processes and staff within the Emergency Department and will not include patients or personal patient information. Routinely captured admission and discharge data, recording demographic and medical cohorts of Emergency Department users, will be identified, aggregated and anonymised if necessary. This data will be integrated into a detailed representation of the patient management pathways within the Emergency Department whilst working towards time-led targets.
2. The controls and activities in place within the Emergency Department to support or achieve the time-led target will be identified through the Delphi method of group work. The group will include the incumbent Emergency Department

Clinical Director, who is clinically accountable for the Emergency Department performance, and the Business Manager, who is accountable for performance against commissioned contracts service levels.

3. Delphi method workgroups will be used to establish consensus for appropriate quality measures amongst clinical staff within the Emergency Department. Senior clinical staff will formulate clinical indicators necessary to measure good quality performance and any set specifications or targets. These indicators and targets will be established to meet the needs of the town and district health community. The group will review the research findings, data detailing local patient cohorts and draw on their tacit knowledge to achieve consensus.

4. By comparing random samples of data in the Emergency Department patient management system to patient notes, the quality and completeness of historic data captured under time-led pathways will be assessed. If credible, a calculation of how that system would have performed under the newly identified needs-led targets will then be made.

5. Using the Delphi method, described in detail later in the chapter, the Emergency Department senior clinical staff will identify an intervention to attain the needs-led measures. Implementation of the intervention will be planned and agreed.

6. Using statistical hypothesis tests appropriate to data type, data distribution and sample size, the needs-led measures from the time-led target system in point 4 will be compared to the changed system of work from point 5. This will be demonstrated using interrupted time series methods and quantified with appropriate regression or variance analysis tests. The significance of the change will be reviewed.

The protocol was implemented in three phases, described in the research schematic in figure 4.1.

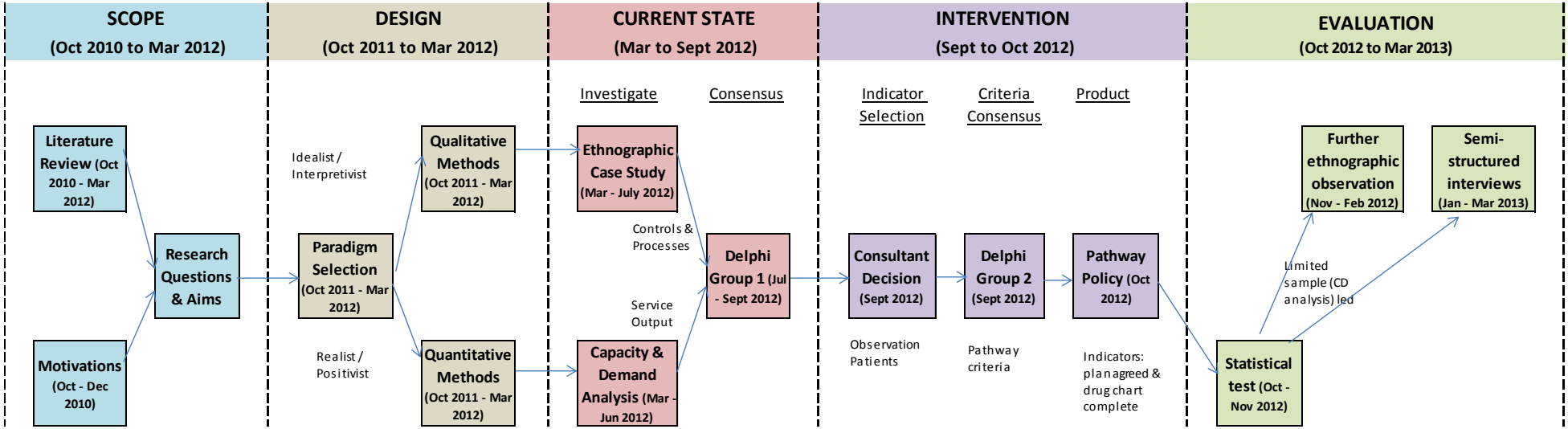
- Protocol points one and two are addressed in the Current State phase in which the ethnographic study, quantitative analysis and Delphi method were used.

- Protocol point three and five are addressed in the Intervention phase. Because of barriers in the case study site, discussed below, point four was not possible.

- Protocol point six is addressed in the Evaluation phase.

The research methods employed in each stage of the study and their relevance in answering the research questions are described in sections 4.2 – 4.4 and, more briefly, in the relevant results chapters and associated papers. A summary of the research stages and the methods for data collection and analysis is shown in figure 4.1.

Figure 4.1: Research Schematic



4.2 Examination of the Current State

The current state of the Enterprise Culture present in the case site Emergency Department was studied to examine the first two research questions.

4.2.1 Research Question 1: What is the nature of the emergency service users' demand?

To answer this question:

1. Routine data recording Emergency Department patient attendances were extracted and analysed to describe demand characteristics of the case site Emergency Department (see sections 4.2.1.1 and 4.2.1.2).

2. Techniques used in private sector best practice in order to understand demand data in order to inform productivity requirements against a target were reviewed from the literature (see section 4.2.1.3).

3. The opportunity of the Emergency Department to use PPP methods to achieve the central the four-hour wait target in a rural hospital was evaluated (see section 4.2.1.4).

4.2.1.1 Demand Data Extraction

Ethical approval was granted to use routinely recorded and anonymised patient data. Opportunities for routine data relevant to examining the research question were discussed with the Trust's Information Services Department in April 2012. The Trust used a computer system for the Emergency Department (Caydar) which operated separately from the main Patient Administration System (PAS). Caydar was used to log each patient attendance and had data categories to record certain features of the patients' personal circumstances (for example name, age, gender, address) and the care provided to them (for example, time of arrival, time of triage, diagnosis). Caydar allowed Emergency Department staff to make free text data entries to many of the data categories, rather than selection of pre-defined responses and as a result some potential sources were discarded because data which did exist were of poor quality. Additionally, many categories were not mandatory for the user to enter and further data sources were discarded because they were insufficient.

A one-year extract of anonymised data (for the twelve months immediately preceding the qualitative study: 1st April 2011 to 31st March 2012) detailing all attendances was sourced. Because of a lack of access to reliable data following system and coding changes at the site, data could not be extracted prior to 1st April 2011. The data extraction contained:

- Patient ID
- Patient age
- Patient's General Practitioner
- Patient's post code
- Arrival date and time
- Arrival mode (car, ambulance, etc)
- Departure date and time
- Departure method (from the Emergency Department, i.e. home, admitted to hospital, etc)
- Referral source (self, GP, etc)
- Presenting complaint (the patient's description of symptoms at arrival)
- Diagnosis (the clinical outcome recorded by the discharging doctor)

4.2.1.2 Demand Data Analysis

Emergency Department demand information was analysed from the data detailing all patients attending the department and accessing the service in the extraction period. The individual data were summarised and presented graphically in order to understand the pressures on the Emergency Department. The graphical representations of the data aim to show demand pressures and variations through the volume of patients and their patterns of attendance over time (i.e. annually, day of week, hour of day). Condensing a large amount of information into descriptions of location (centre of the data distribution) and spread (variability of the data) helps the user to consider the data in "a

few intelligible numbers" (Campbell et al., 2007, 28). Arithmetic means and descriptions of the extent of variation were used in the analysis to aid understanding of the nature of demand.

Although the limited duration of the data available could not enable identification of long-term trends, the analysis represents the case study population and was validated by four members of staff from the Emergency Department recruited as participants to the study, described later in the chapter.

The results of the analysis of the demand data are presented in chapter 5.

4.2.1.3 Review of Private Sector Productivity Techniques

The importance of understanding variations in demand, argued by Silvester et al. (2004), was discussed in the literature review. Silvester et al's. acknowledgement of Lean techniques as appropriate for use in managing variations in demand within health care (2004, 105), was reviewed in more detail to establish individual techniques appropriate to understand the productivity required to achieve time based targets from variable demand patterns. A further review was undertaken to examine appropriate Lean techniques in more detail and the results are presented in section 5.2 and 5.3.

4.2.1.4 Evaluation of Emergency Department Use of Private Sector Techniques

An evaluation of the use of the private sector techniques in the Emergency Department was undertaken. The nature of the demand placed on the case site and the appropriateness and data requirements for the techniques were considered.

To evaluate the techniques:

1. The intelligence generated by the techniques and how it applied to the Enterprise Culture purpose in the Emergency Department was assessed.

2. The data required by the formula in the technique was compared to routine data available in the Emergency Department.

The results of the evaluation are reported in sections 5.2 – 5.4.

4.2.2 Research Question 2: What characteristics of the Enterprise Culture exist in the Emergency Department and what are their effects on performance against the four-hour wait target?

To answer this question:

1. Quantitative archival evidence of the Emergency Department's provision of capacity to meet the demand identified in question 1 was extracted, reviewed and analysed. This included staff rotas, bed capacity and departmental procedures (see section 4.2.2.1 for details of extraction methods and 4.2.2.2 for analysis).

2. Using published performance data and the findings from the capacity and demand analysis, the case site's ability to achieve the four hour wait target was evaluated (see section 4.2.2.3).

3. Using an ethnographic study method, the Emergency Department's processes and systems of work were investigated. Any areas of interest identified in the quantified capacity and demand analysis were also evaluated (see section 4.2.2.4).

4.2.2.1 Archival Capacity Data Extraction

Quantitative archival data from available computer and physical records were identified and accessed through discussion with the Emergency Department's Clinical Director and Business Manager. A review was undertaken to identify anonymised archival evidence available to the study which could quantify numbers of staff members in different grades or roles and other resources that had been planned or actually used to provide capacity in the Emergency Department. The review also identified policy and procedural documents which could affect how much capacity was provided to the Emergency Department and how the capacity should be used in the service.

Planned duty rotas from the department's clinical establishment during the demand data capture were made available, along with a floor plan of the Emergency Department's physical space. Evidence of staff actually on duty during the data capture was not available as archival data. Anonymised data could have been requested to show permanent staff who were paid on a given day for working a shift. However, because

the department relied heavily on bank and agency staff, and matrons and the site sister often made staff transfers to balance the availability of experienced staff across all acute wards at the start of a shift, these data were not deemed credible.

4.2.2.2 Archival Capacity Data Analysis

Because the capacity provided at the case site was not available from archival data, the analysis used the planned provision of the staff on rota, illustrated with the average patient attendances over one day. The analysis, details of physical capacity and relevant policies are listed in the results of the analysis in chapter 6.

4.2.2.3 Performance Data Extraction and Analysis

Performance data were taken from the demand data extraction listed in section 4.2.1.1. The performance data (time spent in department) were calculated from the patient arrival and discharge data and were reconciled to the monthly performance data published by the DH (web source no-longer available). Analyses describing the hospital's performance against the four-hour wait target were taken from the data extraction detailed earlier in this chapter. These analyses involved:

- Presentation of the time spent in the department as a histogram to understand the distribution of the overall data

- A graph describing variation in time spent in the department categorised the hour of arrival (taken from the demand data extraction) of arrival.

4.2.2.4 Ethnographic Study: Data Collection and Analysis

Ethnography is used within the critical realist construct of this research. Rees and Gatenby argue that ethnography in critical realism should explain and not just describe social phenomena (2014). In providing "connective tissue" to sociological components of causal mechanism, Rees and Gatenby argue that traditional ethnographic technique of "getting inside the heads of individuals" is insufficient (2014, 2). Instead, ethnographic enquiry must be made within a concept of social structure (Porter, 2002; Rees and Gatenby, 2014) by explaining the observable events through consideration of the conditions that enabled these events (Rees and Gatenby, 2014, 5). Describing the process for the ethnographer in organsiational studies, Rees and Gatenby emphasise

the need to reveal “the complex interaction between relevant corporate agents, structural conditions and situational contingencies” which is adopted in this research (2014, 7).

Detailed ethnographic observation has advantages over measurement scales, interviews and questionnaires which do not “capture the subjectivity of human beings” (Bowling, 2009, 380). This research combined the advantages of observation which produces the most valid data on social behaviour (Green and Thorogood, 2004, 133) with quantified data analysis for validation in Delphi groups – the technique selected to form consensus, discussed and justified in the next section. This approach addressed the emergency system in a framework for understanding the complexity which Byrne and Callaghan argue defines the “theory” in complexity theories: a means to assert the ontological position that complexity is present in such systems and that “if we want to understand [the world and its social factors] we have to understand it in those terms” (2014, 8).

The ethnographic study used overt participant and structured observation as the qualitative methodological approach. This level of study enabled understanding of the complexity and tacit knowledge of an Emergency Department and the needs of its system of work and the cultural group enacting it (Gerrish and Lacey, 2010). A structured approach to observation was selected over an unstructured one because the latter can result in extensive unstructured notes and may “lose the richness” (Bowling, 2009, 395) needed to assess the use of indicators within the Emergency Department system.

The ethnographic study was guided by significant findings from analysis of planned resource capacity and four-hour wait target performance data from the same Emergency Department. The process for the ethnographic study was:

1. Preparation
2. Ethnographic data collection
3. Ethnographic data analysis
4. Comparison to findings from the quantitative study and final analysis

Preparation

The ethnographic study was conducted over a twelve week period from 2nd April 2012. Data were gathered in two to four hour sessions structured to cover a wide range of operational states within the department including shift changes, evening and night work, weekends and peak and low demand times identified from the quantitative analysis.

The overt participation process was agreed with the Clinical Director of the Emergency Department. Prior to the start of the study, I met the Emergency Department's Consultant and Registrar doctors, Business Manager, Sisters and Administrator to explain the process – the process was disseminated to staff by the Manager.

Data Collection

The process of observation, data capture and recording was:

1. Inform the Nurse in Charge (NIC) of the department upon entering the department of my presence and inquire about any unusual phenomena (extremes in demand or staff shortages, for example) in the Department at that time and my structured observation criteria (see point 3, below).

2. Sit in the nursing station at the centre of the department where the Caydar information, ambulance patient access and most of the treatment rooms were visible.

3. Observations were my visual accounts of events which appeared to be either a cause or effect of the performance of the Emergency Department. No observation was made of direct patient care.

4. Using Caydar information, prompts from the NIC and observations of patient, staff and resources, I noted my observations structured in the categories listed below which were identified from the quantitative analysis of demand, capacity and performance data. My observations looked to capture frequencies, severity and consequences of capacity and demand phenomena on performance against the four hour target. The behaviours of humans, use of physical resources and

organisational structure were observed to identify causes between capacity and demand and subsequent performance.

a. Staff capacity

b. Bed and clinical space utilisation

c. Patients in the department

d. Patient admission patterns and reasons

e. Adherence to care standards (time related, not clinical care)

f. Patients leaving after spending around 240 minutes in the department

5. Some unstructured observation followed when a patient might be followed to a ward or other clinical area for observation of the phenomena in that area.

6. Observations were recorded as data in a written field note diary during the point of observation.

7. Diary notes were immediately typed into a field note journal on return to the nursing station.

Ethnographic Data Analysis

The process of analysis followed a Root Cause Analysis approach in order to identify the causal mechanisms behind observed event or the effect observed events had on wider emergency care performance. The process was:

1. The journal was printed and cut into individual notes.

2. Each note was reviewed and grouped with similar content to create an affinity diagram.

3. Themes from the affinity diagram were reviewed to show how capacity and demand affected performance outcomes and associated workflow diagrams.

Comparison to Quantitative Data and Final Analysis

The tools from the ethnographic data analysis were then compared to the findings from the quantitative study. The comparison focussed on identifying any inconsistencies or harmonies between the two studies and were presented in the Process and People elements of the PPP framework.

Both sets of data were then compiled into a Value Stream Map - a PPP tool to represent how the process operates (Womack, 2005) – to visually represent the causal mechanisms that affect the Emergency Department performance and address this research question (discussed in chapter 6).

Validation of the ethnographic data analysis is described in section 4.2.3 and the results are presented in chapter 6.

4.2.3 Validation of the Current State Data Analysis: Delphi Group 1

Validation of the results of the analysis, described in this section, was undertaken in order to offer credible evidence to the clinical body of the Emergency Department that they could use to create an intervention.

4.2.3.1 Validation Methods Planned

In the original design of the study, the protocol written to examine the research questions anticipated the availability of a wide range of participants and a selection of research methods based on justified techniques. The method set out in the original protocol for the validation of the case study findings described in chapters 6 and 7 was:

1. The controls and activities in place within the Emergency Department to support or achieve the time-led target will be identified through the Delphi method of group work. The group will include the incumbent Emergency Department Clinical Director, who is clinically accountable for the Emergency Department performance, and the Business Manager, who is accountable for performance against commissioned contracts service levels.

2. Delphi method workgroups will be used to establish consensus for appropriate quality measures amongst clinical staff within the Emergency Department. Senior clinical staff will formulate clinical indicators necessary to measure good quality performance and any set specifications or targets. These indicators and

targets will be established to meet the needs of the district health community. The group will review the research findings, data detailing local patient cohorts and draw on their tacit knowledge to achieve consensus.

3. By comparing random samples of data in the Emergency Department patient management system to patient notes, the quality and completeness of historic data captured under time-led pathways will be assessed. If credible, a calculation of how that system would have performed under the newly identified needs-led targets will then be made.

4. Using the Delphi method, the Emergency Department senior clinical staff will identify changes necessary to attain the needs-led measures. Implementation of the changes will be planned and agreed.

5. Using statistical hypothesis tests appropriate to data type, data distribution and sample size, the needs-led measures from the time-led target system in point 4 will be compared to the changed system of work from point 5. This will be demonstrated using interrupted time series methods and quantified with appropriate regression or variance analysis tests. The significance of the change will be reviewed.

However, during the process of recruiting participants to the study, the limited number and availability of those staff members who met the inclusion criteria (permanent staff members with at least one year experience in the Emergency Department) became clear. Discussions with the Clinical Director and Business Manager revealed that, from the total number of Emergency Department staff, twelve were experienced enough to validate the findings. Although it was hoped that all twelve could be recruited, due to long-term illnesses and work secondments, only eight were in a position to be approached.

These limitations led to changes in the protocol resulting in the research schematic described earlier in the chapter. The change in protocol represented the first major barrier to conducting research in practice within the environment of a small, rural DGH. It also represented the possibility of pragmatically mixing techniques to best address the

research questions (Tashakkori and Teddlie, 1998) and provide a detailed case site description (Sandelowski, 2000, 251-252).

4.2.3.2 Validation Methods Used

Validation of the data was achieved by presenting the analysed summary data to the eight staff who were successfully recruited to the study using online survey software which protected their anonymity. The staff were asked to agree the accuracy of the findings and comment on any concerns or points of interest.

The validation assisted the study by mitigating against the risks that Yin describes when using archival evidence: researchers must "be careful to ascertain the conditions under which [the evidence] was produced as well as its accuracy" (2014, 109). Selecting the population of all attending patients avoids sample error (Campbell et al., 2007, 81). These data are deemed relevant to investigate the theory in the contemporary case study (Yin, 2014, 109-110) by describing the site in context of the ethnography that followed the analysis.

Only local data were extracted and analysed because the study aimed to test the theory of the efficacy of the Enterprise Culture in the case site and be generalisable to the theoretic proposition, not as a sample of a population (Yin, 2014, 21). No comparison to national or alternative emergency care provider data was therefore considered necessary. However, during the validation some comments were received suggesting certain demand features may be unique to the case site and analysis was performed to examine the claims and assess the impact on potential use of the PPP framework.

Three popular options described for gaining consensus are: Delphi Groups, Nominal Group Technique and Consensus Conferences (Green and Thorogood, 2004, 109; Bowling 2009, 437). Bowling describes issues with using these techniques. Firstly, bias may be problematic because of suitable representation of participants and secondly there is debate about the "validity and reliability of the techniques" because there is no agreement about which is the most appropriate and they are, in any case, often used in combination (Bowling, 2009, 437).

Delphi Groups use questionnaires which rank participants' agreement with certain statements and are usually conducted by post or electronic means in order to maintain

anonymity of the participants. Rounds of questionnaires are used until the level of consensus reaches a pre-determined level.

Nominal Groups bring together experts who have decided and quantified their views on a topic before meeting and then have a chance to review this following consolidation of all participants' views and subsequent debate.

Consensus Conferences generate consensus through debate amongst experts or lay people and are not structured or quantified in the same way as the Delphi and Nominal group techniques.

Consensus Conferences were discarded because the experts in the Emergency Department system are few in number and greatly varied in levels of responsibility. In addition, with more senior, stronger participants, there is a risk that they might exert a disproportionate influence in this unstructured, open debate. Because the ethnographic evidence needed detailed explanation from the researcher and participants needed time for discussion about social interactions a nominal group meeting of experts was deemed more appropriate than postal questionnaires. However, developing and quantifying participants' views were also considered critical so the Delphi technique of questioning was also chosen.

The Delphi technique gains consensus through asking an open question to "obtain ideas or attitudes" which are summarised to generate closed questions which "rank agreement" with certain topics (Bowling, 2009, 437) – agreement usually being measured using a Likert scale.

A modified Delphi study, including a nominal group, was planned to validate the case study's capacity and demand findings discussed in previous chapters. A group approach was preferred to interviews with individuals because groups provide greater "access to interaction between participants, and thus some insight into how social knowledge is produced", (Green and Thorogood, 2004, 107). Green and Thorogood state that "the type of group chosen will depend on the aim of the study" (2004, 109).

An open question Delphi round to "obtain ideas or attitudes" (Bowling, 2009, 437), was undertaken using online survey software. The research findings from the analysis of

demand, capacity, performance and the ethnographic study together with summarised comments about the validity of the analyses from the Delphi round were then presented to the participants in advance of a smaller nominal group to achieve consensus.

Likert scales record an ordinal response – where there is no expected interval or continuous relationship between answers (Bowling, 2009, 313). Consensus agreement through response to Likert scales is a point of debate. Bowling emphasises "there is no assumption of equal intervals on the scale" (2009, 316) and so they are ordinal in their data distribution. A nine point Likert scale to rank participants' responses does not remove the middle response but gives a greater range for analysing a central tendency (a typical value to indicate the centre of a distribution, namely the mean, mode or median) to identify consensus. Bowling also notes that a middle response may attract participants who wish to remain neutral (2009, 321). Although recognising that the data are ordinal and not continuous, the research used the median score, which is more robust than the mean to outliers (a particular concern given the effect small sample size) and is the "preferred" central tendency for analysis (Bowling, 2009, 440).

Validation was achieved in the group by discussion of the findings and comments and ranking of agreement using a nine point Likert scale, the results are detailed in section 7.2. Consensus was achieved using Bowling's rules to analyse median consensus levels from all responses (Bowling, 2009):

- 1-3 points – the findings are not validated.
- 4-6 points – no consensus is achieved.
- 7-9 points – the findings are validated.

4.2.3.3 Participants

Bloor et al. suggest that a minimum Delphi group size is four, however they argue that a more important factor in the group dynamic is a balance of "viewpoints, experience and interests" (2015, 66) and the study aimed to achieve this within the restrictions of the limited number of potential participants available in this small, rural DGH. Potential participants were approached individually and were taken through information sheets regarding the research and were invited to participate. Time was given to the potential

participants to ask questions and chose whether or not to participate. Wording from the participant information sheet is included in appendix 6.

Initially, participants were required under the original protocol for three Delphi groups to gain consensus from the participants. Six members of staff were successfully registered to the study. These participants represented the following areas of DGH emergency care.

- Consultant in Emergency Care
- Consultant in Acute Medical Care
- Registrar in Emergency Care
- Emergency Department Nurse Sister
- Emergency Department Staff Nurse
- Business Director for Emergency Care

The changes to the protocol meant that only one Delphi study was necessary. The participants were retained however, following their agreement for further involvement using the participation information and consent forms (not appended in order to protect the anonymity of individuals and the case study site) and formed the sampling frame for the semi-structured interviews.

4.3 Implementation of the Intervention

An intervention to improve the transfer of patients between the Emergency Department and a ward which specialised in decisions to admit or discharge patients was developed by the department's consultants. The intervention was designed and implemented in order to allow an evaluation of the efficacy of the Enterprise Culture present in the Emergency Department when undertaking improvements to quality and efficiency recommended from this research. Evaluation of the intervention (discussed in the next section) addresses research question 3. In order to create an intervention to test:

- The findings of the quantitative capacity and demand analysis and the ethnographic study were confirmed through the Delphi method of group work (described above).

- Using the outcomes from the Delphi workgroup, senior clinical staff formulated clinical indicators and pathway changes necessary to measure good quality performance and any set specifications and targets.

4.3.1 Methods for the Intervention

The intervention allowed the consultant body of the Emergency Department to select an area of concern within the boundaries of their clinical responsibility and propose and implement a solution. The process for implementing the intervention was:

1. Define the intervention topic
2. Agree the criteria for the intervention
3. Develop the intervention
4. Communicate the intervention and implement

<u>Defining the Intervention</u>

A meeting of the Emergency Department Consultants was scheduled on 2nd September 2013 with the single purpose of defining the intervention topic. Two weeks before the meeting I had met with both of the substantive Consultants and discussed the findings of my research and the need to meet to agree an intervention. The purpose of the meeting was described as an open discussion for Consultants to decide the area for intervention and an associated outcome using any evidence that they felt was reasonable. I gave each consultant a paper copy of the evidence from my quantitative and qualitative analysis and followed this up with an email of the same data, a link to the results of a recent clinical audit of the Emergency Department and a re-iteration of the purpose of the meeting.

The meeting was scheduled to use some of the time of an existing weekly session during which the Consultants discussed the department's performance against the four hour wait target with the Business Manager. The Clinical Director offered this opportunity to

overcome the usual six-week notice required by Consultants to arrange non-clinical time and because of the relevance of my topic to the originally planned session.

Although ninety minutes were available for my meeting, the Consultants required less than twenty minutes to define their intervention - described below (in section 7.3). Both had discussed, and held strong and matching views on, the intervention need before the meeting. There was no formal structure to the meeting, however following my re-iteration of the purpose, the Clinical Director proposed the intervention topic and the expectations of the improvements to service.

He expressed his plan to set the criteria for the intervention using consensus from requested my help in using the Delphi method to achieve this.

Agreeing the Intervention's Criteria

The Clinical Director's for Emergency Care and Acute Medicine convened during week commencing 2nd September 2013 to discuss potential criteria for the intervention and compiled a list of aspects of care that could be included in the new pathway. I was requested to create a Delphi tool to gain consensus of which criteria to include the intervention. I was given a list of participants that the Consultants had created which represented clinical and administrative staff and patent group representatives and over three weeks from 9th September 2013 the following process was undertaken:

- In round one, participants were invited to read a background document on the problem and proposed intervention that the consultants had written. They were invited, using the Survey Monkey online questionnaire, to answer an open question asking what criteria of care the intervention pathway should include.

- The Consultants took the answers from round one and amended their original list of questions to form round two.

- Participants were invited to answer the round two questions which used the same scoring criteria as the Delphi group described above.

- I produced analysis for consensus for the Consultants against the same acceptance level for consensus described above.

Develop the Intervention

During week commencing 30th September 2013, the Consultants listed all of the criteria which achieved consensus for inclusion and combined them into a policy document describing the clinical pathway that staff in the Emergency Department and the Clinical Decision Unit should follow. The target of achievement for the pathway was set at 100%.

The policy document was sent to participants for comment, amended and agreed by the Consultants from the Emergency Department and the Clinical Director from the Clinical Decision Unit.

Implementing the Intervention

The policy was communicated to the relevant staff during the week commencing 21st October 2013.

4.4 Evaluation of the Intervention

To measure the effect of the intervention, sets of patient notes were reviewed by the Clinical Director. In total, seventeen sets of notes from patients following the intervention were randomly selected from the week following implementation of the intervention. It was estimated by the Clinical Director that around eighty patients requiring observation may have transferred from the Emergency Department to CDU in the week but data was not available to confirm this. The sample size reflected only the time that the Clinical Director was able to commit and not a number calculated to give precision to a statistical test. Because the intervention chosen by the consultants represented a new process, comparative tests against previous performance were not possible. However the proportion of patients complying with the intervention indicators (when reviewed by the Clinical Director) was calculated. The confidence interval of the proportion of patients in the sample who complied with the intervention was calculated to "define a range of values in which we are confident the population parameter is likely to lie" (Campbell et al., 2007, 89).

The evaluation of the implementation was designed to address the final two research questions.

4.4.1 Research Question 3: The private enterprise framework adopted by the Emergency Department is successful in achieving the aims of the Enterprise Culture.

To answer this hypothesis:

- Using statistical methods appropriate to data type, data distribution and sample size, the efficacy of the intervention was evaluated (described in section 4.4.1.1.

- Additionally, a further ethnographic study to observe post intervention practices was undertaken, described in section 4.4.1.2.

- Using the semi-structured interviews, the Emergency Department senior clinical staff assessed the efficacy of the changes and draw conclusions to the identification and use of needs-led indicators, described in section 4.4.1.3.

- The findings from all research methods were compared to PPP expectations and the hypothesis outcome was justified, the results are discussed in chapter 7.

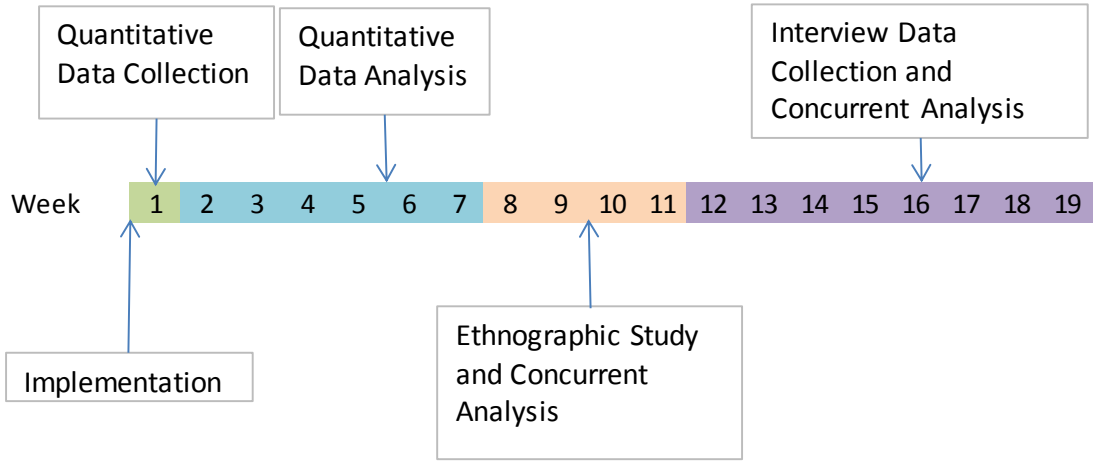
4.4.1.1 Statistical Evaluation of the Intervention Efficacy

The intervention looked to resolve a clinical issue where patients requiring hospital clinical observation (but not admission to a specialty ward) did not always have an adequate care plan and drug chart when leaving the Emergency Department. The intervention was implemented through the introduction of procedures to ensure that the care plan and drug chart were created in the Emergency Department and transferred with the patient to the ward responsible for observation.

The confidence level calculated carried risks when drawing conclusions about the efficacy of the intervention. Two risks in particular were identified, firstly the limitations of the small sample size caused a risk of falsely representing the population leading to inaccurate test results (Campbell et al., 2007, 79-94). Secondly, there was a risk that the results could be unrepresentative of long-term performance because they were taken from one week close to the implementation of the intervention when performance may be affected through the novelty of the practices. The effect of expected observation may have been anticipated by staff leading to an unnatural and temporary increase in

performance levels. These risks led to a need to triangulate the quantitative analysis of the intervention, as detailed above. Two methods were devised to achieve this; a further period of ethnographic observation and interviews with the participants who registered for the Delphi study. The schematic in figure 4.2 describes the evaluation timeline from the implementation of the intervention.

Figure 4.2: Schematic of Post-Intervention Evaluation



4.4.1.2 Post Intervention Ethnographic Study

In order to observe the nature of the implementation and the potential for longer-term performance patterns, a second period of observation was undertaken two months after the implementation of the intervention. This study commenced in January 2013 and was undertaken over four weeks and totalled ten hours of observation of compliance with the intervention process during a time of high winter pressure for acute hospital beds. The observation was undertaken using the same method as the initial research: a critical ethnographic study using overt participant, structured observation, but focussed only on patients following the observation pathway. Fourteen patients were followed through the observation pathway in the study. In the study, the identification of observation patients, their transfer from the Emergency Department to the CDU, clinical handover, and presence of a care plan and drug chart was observed. Although the contents of the care plans and drug charts were not reviewed, the actions of CDU staff to follow-up care or drug related queries with the Emergency Department was also observed. Due to the application of the pathway, the study was split between the Emergency Department and the Clinical Decision Unit.

The study was structured to follow the progress (although no clinical interventions) one observation patient at a time through the intervention pathway. Observation patients were identified by the NIC who informed me of their status and location. Following notification I went to the Emergency Department to check the patients' time of arrival and observe preparation for transferring the patient. I then followed the transfer to the CDU where I observed the nurse to nurse handover from the nursing station. Following the handover, I reviewed the transfer documentation and compiled my field notes. The fourteen patients observed in the study represent the total notifications I received from the NIC during the study time. No overlap between patients occurred allowing me to observe their progress individually.

4.4.1.3 Semi-Structured Interviews

Interviews were selected to allow me to use open questions to control the line of questioning and limit the indirect views of the interviewee (Creswell, 2014). Questions used easy and non-threatening language to reduce the possibility of bias (Bowling, 2009, 321-325). This questioning focussed on compliance to the targets of the intervention and subsequent additional ethnography. Additionally, interviewing the participants avoided the barriers of assembling groups due to conflicting duty rotas.

The purpose of the interview aspect of the qualitative research was to evaluate the efficacy of the intervention and, in doing so, understand the nature of social complexities and behaviours of the actors within the Enterprise Culture present in the case site. Existing findings from the earlier stages in the research were used to shape the analytical method and although no deductive hypotheses were developed prior to the qualitative data analysis the analytical process was not purely inductive either. This analysis followed an abductive framework, using earlier research findings rather than "setting all preconceived" ideas aside (Timmermans and Tavory, 2012, 180).

Creswell and Clark argue that qualitative data analysis involves coding data and then grouping those codes into themes (2011, 208). Coding is the organisation and classification of data into key themes (Bowling, 2009, 415-425). Bazeley asserts that data from transcripts require classification in order to make sense of them and that coding offers a method to "build knowledge" from the data (2007, 66). Punch states that coding is the starting activity to be used as the foundation for qualitative analysis

(2014, 172), however Creswell and Clark recommend an exploration of the data prior to coding, "to develop a general understanding of the database" through memos in the transcripts (2011, 207). Although Saldana considers criticisms against coding as originating from post-positivist approaches which often generated "topic-driven lists", he acknowledges that coding is not the only way to analyse qualitative data and there are times when it is necessary and times when it is inappropriate (2013, 39-40). Saldana prefers a pragmatist approach, choosing the best tool for the research topic (2013, 2).

When complete, codes "are grouped together into broader themes" and the themes grouped into "even larger dimensions" to give perspectives of the findings that provide answers to the research purpose and questions (Creswell and Clark, 2011, 208). Coding and thematic analysis are justified as the suitable tools to analyse the responses from participants in the context of the themes derived from the post-implementation quantitative analysis and ethnographic study.

Bowling describes the interpretative imperative that is placed on the researcher in coding qualitative data as a "strength and weakness" (2009, 415) of the method. Considering this imperative, Bazeley discusses approaches to coding and broadly defines "splitters… who maximize [sic] differences between text passages" to form detailed themes and "lumpers" who look for overarching themes or an approach which combines the two (2007, 66-67). Although Saldana argues that "no one… can claim final authority on the best way to code data" he states that answering the research question will influence the choice (2013, 60). Saldana asserts that "rarely will anyone get coding right the first time" and argues that codes will develop through cycles of data analysis (2013, 10-11).

The interviews were undertaken between January and March 2013. Four of the original six participants who remained in post or available to the study were interviewed. To gain consent, I met the participants individually and explained the purpose of the interviews and the process of conducting them. Participants were left with information sheets and consent forms before making a decision (see appendix 6 for the content of the participant information sheet). The interviews were conducted in private meeting rooms and recorded and data was transcribed in preparation for analysis (Creswell and Clark 2011, 206), and lasted between 15 and 55 minutes. The content from the

transcribed data was checked for accuracy, explored using memos (Creswell and Clark 2011, 206) and then manually coded on hard copy printouts, which Saldana argues, gives more control over process for small scale studies (2013, 26). First cycle coding was undertaken to define broad categories from all transcriptions and second cycle coding refined participant comments into key themes. These themes were considered in context of the other findings of the post-implementation evaluation.

4.4.2 Research Question 4: How can the private enterprise best practice framework or other best practice method be introduced to meet the needs of the local emergency care system?

Using the findings from the analysis of the demand, capacity, performance and ethnographic studies and their subsequent validation together with the findings from the evaluation of the intervention, this research question was addressed by the following protocol:

- The key differences between Enterprise Culture and PPP identified in the study were reviewed and cause and effect relationships and mechanisms established.
- Gaps and limitations in the research were identified.
- Practical methods to address the opportunities identified from the research and its limitations were proposed.

This discussion is described in chapter 8 where future research possibilities are identified.

4.5 Ethical Approval

The ethical concerns of researching in an environment where I was a senior manager were addressed by the design of the research protocol and the ethical approval granted to follow it. As a manager I was able, and often had to, access and analyse confidential patient data as part of my employment. However, I could not do this within the boundaries of the research and any data and knowledge I had from my employment was not usable in the research. Although I was a manager within the Trust running the case site, I was employed at a different hospital and I did not access confidential data relevant

to my research at any time during the study. Despite this, however, I did have knowledge of some areas which may have been potential causal factors from briefings and reports. This background knowledge was used to structure observation planning.

The research design identified and managed the risk of ethical issues which were reviewed and approved by ethics committees in the University of Lincoln (appendix 3). The hospital's Research and Development (not included for anonymity) and the National Research Ethics Service (not included for anonymity). The ethical tensions identified related to the safety and confidentiality of patient and staff participants. To ensure that potential ethical issues and adverse events were mitigated against, the research was designed with the following considerations.

- This research did not directly involve patient contact or personalised patient information. The ethnographic research focussed only on patient movement as a process step or clinical activity as they progressed through the Emergency Department and looked only to classify patients by presenting condition or other clinical attribute. No personal information was obtained and any patient specific information used a non-identifiable code.

- Clinical safety remained the responsibility of the Clinical Director of the Emergency Department at all times and any changes to clinical practice through the research will be authorised by the Clinical Director and Trust governance processes.

- Interviews and work with staff were to be undertaken only after I had obtained informed consent. Participants were able to opt out of the research with no detriment to their work activity.

- Recordings and transcription of the information were made anonymous and were stored as electronic sound or text files on an encrypted, password protected computer.

- I abided by the Caldicott principles of data gathering and storage (Department of Health, 1997). These principles set quality standards for health and social care

organisations that manage and use their clients' personal information. The principles ensure confidentiality and protection to clients' information.

4.6 Conclusions

The study aims to conduct research into effectiveness and efficiency in the Emergency Department of a rural hospital using a mixed methods approach which to create a framework for intervention (Turner et al., 2014).

Although the PPP framework is suggestive of organisational theories, the nature of health care systems are more aligned to complexity theories. This research adopted a deductive theory which aims to test the organisational and social factors within the framework implemented by the Enterprise Culture and their effect on performance improvement outcomes.

A pragmatic view of combining methods allows limitless opportunities to test the theory however the study adopted a dominant quantitative element to test the deductive theory and provide a guide to focus the research and avoid a loss of control. A case study approach is justified to allow a wide range of techniques to answer the research questions and examine the social and organisational elements through pragmatic selection and application.

This theory and the strategy to test it is broadly positivist but include "interpretive assumptions to reflect the social constructs inherent in the research environment" (Turner et al., 2014).

The case site selected is the Emergency Department of a rural DGH. Although I was a manager in the Trust responsible for operating the case site, which presented some ethical considerations and potential limitations in conducting research, the study was planned to mitigate any significant complications and approval was granted from the relevant ethics committees.

The data strands described in this section have been presented in their roles to answer each of the research questions which in turn are designed to test the theory discussed in chapter 3. Although always designed as a mixed method study, changes to the original

protocol have been justified to address the research questions whilst keeping the integrity necessary to the Critical Realist construct.

The stands of quantitative capacity and demand data are given additional probity through the critical realism ethnography to explore causal mechanisms of the Emergency Department's performance against the four hour wait target and scrutinised through a Delphi group technique to gain validation from the staff of the case site.

From the intervention quantitative and qualitative data were used to examine the aims of the Enterprise Culture. Qualitative data was deemed necessary to address some concerns over evaluating the effects of the intervention by adding context to the outcomes.

5 Results: The nature of Emergency Service Users' Demand

5.1 Introduction

The results of the study are presented across the next three chapters. This chapter records the demand placed by patients on the case study site within the context of the Purpose, Process People (PPP) framework, leading to the publication of a paper entitled an 'Evaluation of Demand in a Rural English Hospital Emergency Department' (Turner et al., 2015b). The paper was accepted for publication in the British Journal of Healthcare Management in June 2015 and is included in appendix 8.

The purpose of this chapter is to address the research question 'what is the nature of the emergency service users' demand?' using the methods described in chapter 4.

5.2 Understanding Demand

Efficiency and quality through the PPP framework are achieved by designing and implementing processes and people skills to meet a clear and accurately specified customer purpose (Turner et al., 2013b). Although Turner et al. (2013b) argue that the centralised targets introduced through the Enterprise Culture are not developed within the PPP "purpose" context of "precisely the right value for the customer" (Womack, 2005, 6), central targets do present a performance improvement outcome against which to test this study's theory (to test if the Enterprise Culture has provided a framework for performance improvement in a rural DGH). The Emergency Department performance target developed through the Enterprise Culture under the Department of Health's first reforming emergency care paper states that patients should not "wait more than four hours in an [Emergency Department] from arrival to admission to a bed in the hospital, transfer elsewhere or discharge. The average length of waiting should fall to 75 minutes". (Department of Health, 2001).

This section discusses a typical PPP response to analysing demand to inform the rate of productivity necessary when planning the processes and people skills.

Improving time related delivery through the PPP framework requires an understanding of the demand placed on a service and the rate at which work is completed. Time taken to deliver work (Lead Time) can be calculated using Little's Law where work in progress

is the number of items waiting to be completed and the completion rate is the number of items that can be completed in a specified time frame (George, 2003, 26).

$$Lead\ time = \frac{Amount\ of\ Work - In - Progress}{Average\ Completion\ Rate}$$

Within an Emergency Department this formula would read:

$$Time\ in\ EmergencyDepartment = \frac{Patients\ in\ Department}{Average\ Discharge\ Rate}$$

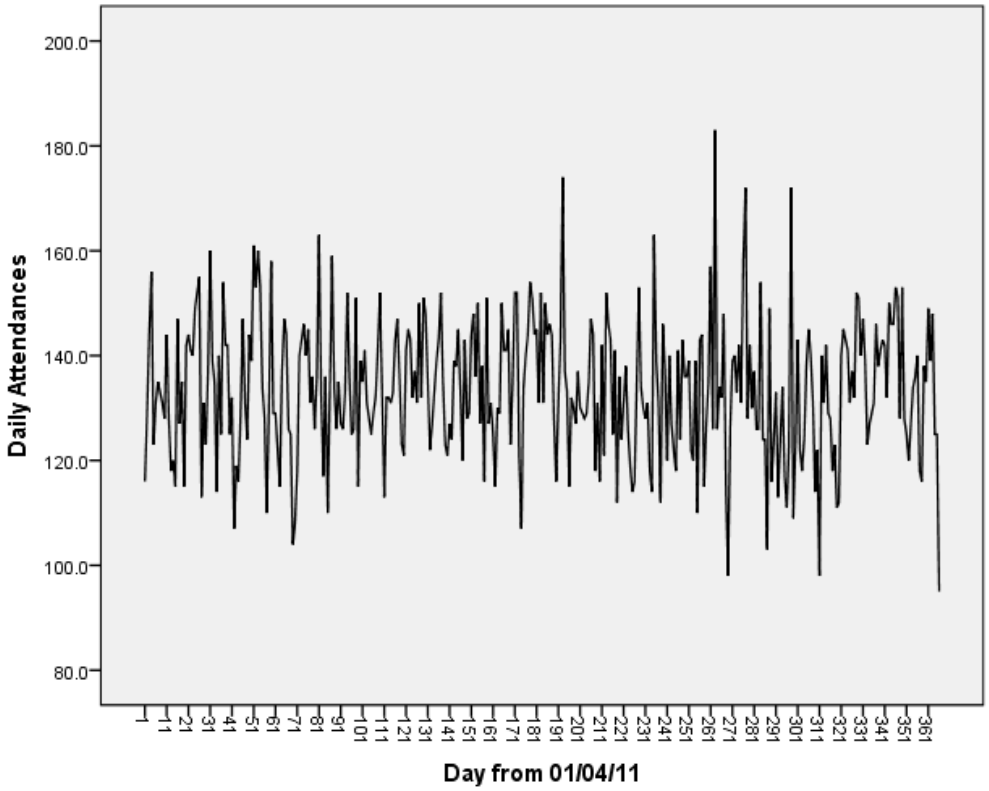
To improve performance in time spent in the Emergency Department, two options are available; decrease the patients in the department or increase the rate of discharge. Understanding demand is necessary in order to intervene on both of these options, either through diversion of patients or improving process or people to increase the completion rate for patient cohorts.

5.3 Demand Analysis

5.3.1 Annual Demand Patterns

48,919 patients attended the Emergency Department over the year. The daily attendance figures, in chronological order from 1st April 2011 (data point 1), are shown in figure 5.1.

Figure 5.1: Daily attendances



These data show no clear evidence of trend or seasonal patterns. Daily attendances are accepted as normally distributed in the year (p=0.2 in both Kolmogorov-Smirnov and Shapiro-Wilk tests for normality) around a daily mean of 133 patients with a standard deviation of 13.6 patients.

These data were validated by the participants who considered it representative of usual annual performance patterns. One participant did suggest that summer attendances were thought to be higher as the coastal holiday attractions within 20 miles of the hospital increased the population during that time. Analysis of attendees' permanent Post Code revealed evidence to support this theory. Average daily attendances from patients presenting to the Emergency Department whose permanent Post Code was not in the local health commissioning area are shown by month in table 5.1.

Table 5.1: Average daily attendances from non-local patients by month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.0	3.1	5.2	8.3	8.4	7.7	8.3	13.4	7.9	6.7	4.5	4.5

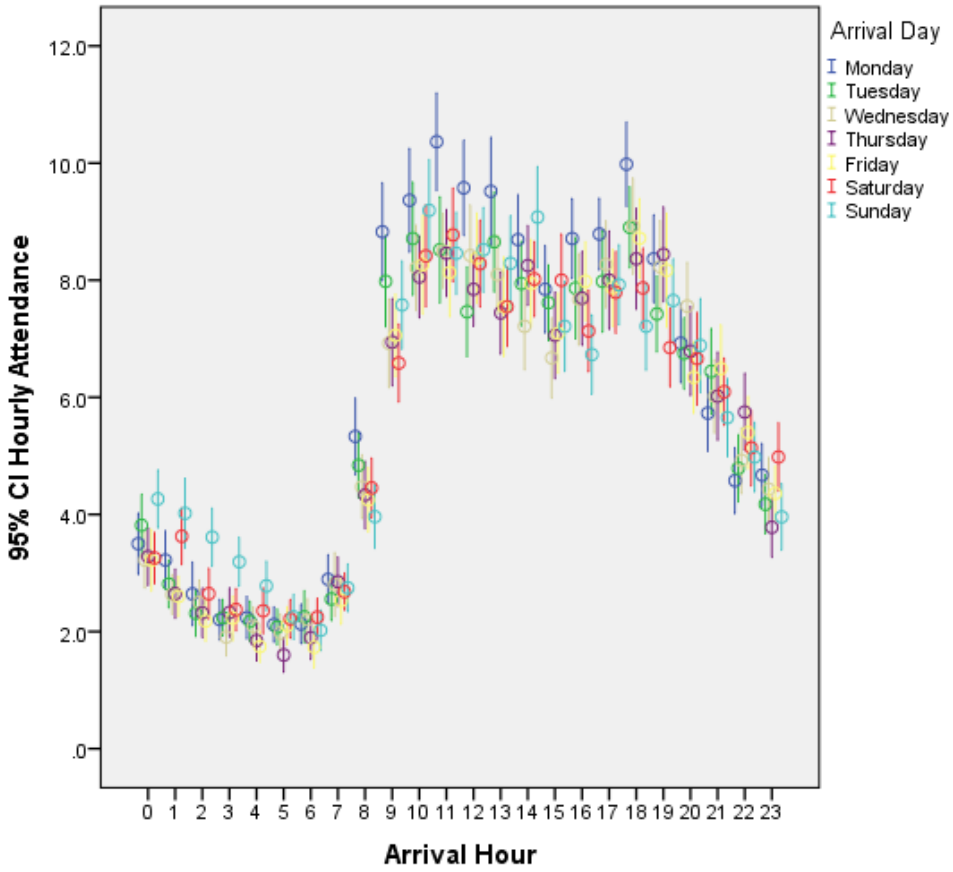
However, for PPP planning purposes the overall attendance distribution gives a stable expectation for attendances and is not affected by the seasonal movement of patients from outside the health commissioning area. In a normal distribution, 68.3% of the population lay within one standard deviation either side of the mean and 95% within 1.96 standard deviations (Campbell et al., 2007, 72). This means that, given no seasonal variations, the emergency department can be 68.3% confident of between 119 and 147 patients attending on an average day and 95% confident of between 106 and 160 attendances.

Moreover, these data follow the national pattern of attending patients described by Downing and Wilson (2002, 533-534) who found no significant seasonal variation overall in their study of temporal and demographic variations in NHS Emergency Department attendees.

5.3.2 Hourly Demand Patterns

Daily attendance patterns are reasonably stable and unvaried, however analysis of a shorter time-frame shows greater levels of variation. Figure 5.2 describes the 95% confidence interval for mean hourly attendances by weekday.

Figure 5.2: Hourly attendances by day of week – all patients



Adjustments in the service capacity provided across the day-by-hour period, to synchronise the rate of discharge to the demand for service, are necessary to avoid build-up of patients in department (Womack and Jones, 1996, 55-56). The PPP response to this concept is the 'takt-time' technique. Takt-time is the average elapsed time between patient discharges – and movement between each treatment step whilst in department – (Womack and Jones, 1996, 55). It is calculated by taking the time available in a work period divided by the number of patient attendances. As "takt-times change when customer demand changes" (Miltenburg, 2007, 3556), when calculated, takt-time by hour over the week can become a local departmental indicator against which to measure performance and investigate improvement potential.

However, the Emergency Department had two work-streams which split patient demand: major work-streams (including resuscitation) – more acutely ill patients who were likely to be admitted – and a minor work- stream. The Emergency Department definition of patients presenting to the major stream were all arrivals through

emergency services and any other patients assessed as such at triage. All other patients were classed as minor. The data extract did not allow analysis using the Emergency Department's definition of the stream patients were treated in as no such data category was available. However, an analysis of patients admitted as a hospital in-patient or who died in the department is shown in figure 5.3 to offer a comparison (these patients were deemed 'major' by the Information Services Department who provide the data).

Figure 5.3: Hourly attendances by day of week – patients admitted or died in department

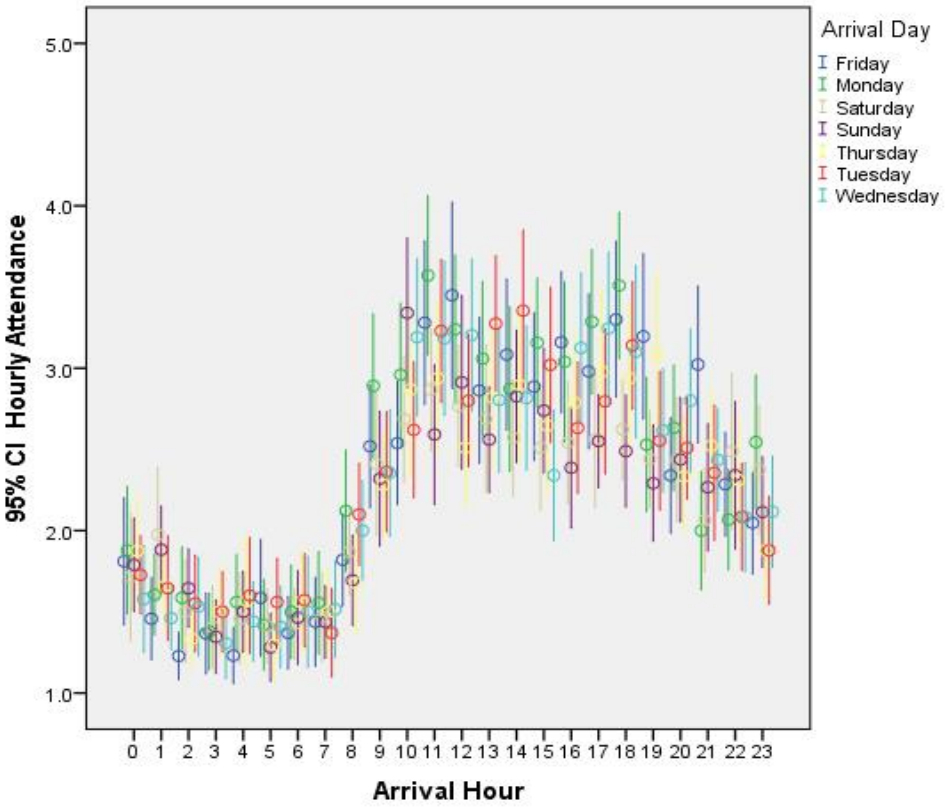
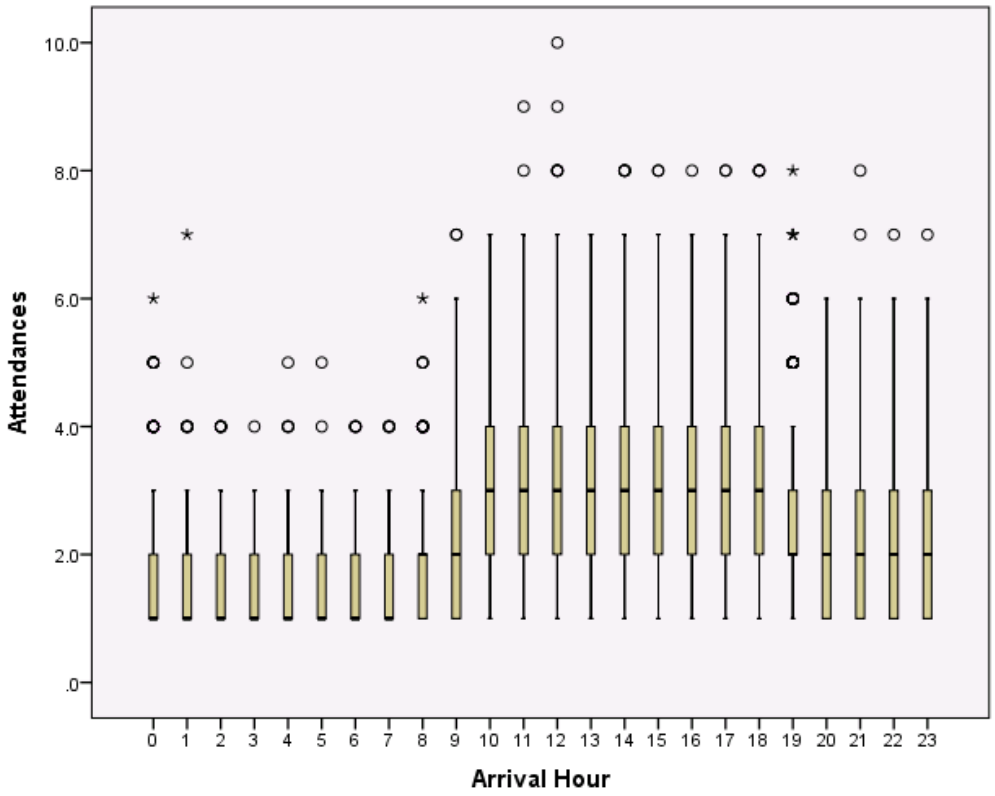


Figure 5.3 shows that attendances by week day and hour of day followed similar patterns, although a chi-square test comparing the frequency of attendances rejected the hypothesis that the observed number of patients attending by day and hour is consistent with the expected attendances by day and hour (p=0.001). However, this analysis could be used as a starting point for calculating the takt-time for a 'baseline' day for patients demanding higher levels of care.

Although there is variation between weekdays, the largest source of uncertainty from the data was the width of the confidence intervals around the mean. When grouped by arrival hour, all tests for normality were rejected (p=0.00 in both Kolmogorov-Smirnov and Shapiro-Wilk tests for normality for all hours) and each hour fits an exponential distribution. To describe the range of data around the median, a boxplot is used in figure 5.4.

Figure 5.4: Hourly attendance – patients admitted or died in department



Although the inter-quartile ranges (vertical oblong boxes) and median (horizontal black line within the inter-quartile range) have a relatively small extent, the data outside this area (particularly the extent over the 75th percentile) extend significantly further. Statistical outliers (marked o or *) also show a variation in the attendance outside of the central tendency.

The hourly demand data were recognised as valid by the staff and no comments were made about the accuracy or interpretation of the data. However, two participants did request further analysis to show attendance profiles by diagnosis type. This was unfortunately not possible as over 30% of the data were not recorded for attending patients and the Clinical Director declared that the remaining data did not appear to

represent the case-mix of patients in the department in his experience. The detailed diagnosis data were entered in a free-text field meaning that the operator entering the data had to type in details based on the patients' notes and not by selecting from a pre-defined list. This resulted in instances of undecipherable spelling and irrelevant data in some instances where the data were provided.

5.4 Discussion

Through the PPP framework, I argue that the amount of time patients wait in an Emergency Department can be calculated using an adaptation of Little's Law following George's use of the formula in the private sector to study time to deliver work (2003). The numerator in the formula demands a count of the number of patients in the department. The denominator demands the rate of discharges.

To ensure that discharge is synchronised to demand patterns, takt-time can be calculated to quantify the productivity needed from the department's processes and people. Such evidence leads to the production of departmental indicators which highlight the need for immediate intervention if a problem occurs.

The purpose of this analysis was to provide an initial profile for matching demand with discharge performance in order to meet the central target. The range of arrival data and variation described in the case site may present difficulties if used in planning resources to meet productivity, but knowledge of this level of variation is critical to inform baseline processes and staff planning in order to provide a flexible service. A constant view of patient arrival is necessary to ensure Miltenburg's flexible takt-times (2007, 3556) so that discharge productivity can be adjusted when demand varies significantly (or indeed case-mix deviates from expectation – a level of analysis not possible from this case site data). The purpose of takt-time is to provide a clear indication of the rate of productivity to be achieved if the target is to be met and this is an indicator for immediate local action.

The analysis has shown a PPP response to the purpose value assigned to an Emergency Department in a rural DGH emergency care system under the Enterprise Culture. Although a PPP response to the four-hour wait target cannot be fully calculated from the source data, a framework to achieve the purpose can be planned at a local level.

The quality of data available to identify significant local patient cohorts and create meaningful takt-time calculations presented a significant improvement opportunity for the Emergency Department. In discussions with the department's managers regarding the data quality limitations, the Clinical Director suggested a review of a sample of patients' notes to begin to provide evidence of cohorts and form calculations. This level of discussion was encouraging and Emergency Department staff were able to anecdotally identify cohorts of patients who they believed generally arrived at certain times. For example, it was proposed that significant numbers of patients aged 65 and over attended between the hours of 09:00 and 11:30 with minor illnesses as they were not able to get appointments with their own General Practitioner. This could form the basis of a PPP analysis to quantify the theory which, if it were true, could be resolved with the two options under Little's Law: diverting patients to a more suitable location (if possible or desirable given local circumstances) or takt-time calculation for a suitable practitioner within the department to care for those patients.

Although discussed as a possible intervention for this research, this idea was not pursued because of the lack of clinical time available to perform the review.

5.5 Conclusions

This chapter has addressed the research question 'what is the nature of the emergency service users' demand?' In simple terms, demand through patient attendance is easy to describe and the normally distributed nature of the attendances per day and the common profile of those attendances by day and hour offer a good opportunity to use PPP techniques to calculate productivity rates (by providing necessary to meet the Enterprise Culture four hour wait target).

However, the detail of the patient attendances requires more work and accurate cohorts of attendees may give greater opportunities for planning care provision and achieving the target. This analysis can be used to inform an Emergency Department's work rate and the people skills required despite the high levels of variation in arrivals if a flexible approach is used.

6 Results: The Characteristics of the Enterprise Culture in the Emergency Department

6.1 Introduction

Following the description of the case study site's demand from patients in the emergency setting, this chapter records the analysis of emergency care capacity and performance. Data recording the capacity provided or planned is described and an evaluation of how capacity and demand affect performance against the four-hour wait performance target is made. The performance target used is the Enterprise Culture's indicator to measure emergency care provided in hospital Emergency Departments: to ensure that patients should not "wait more than four hours in an [Emergency Department] from arrival to admission to a bed in the hospital, transfer elsewhere or discharge" (Department of Health, 2001).

The research in this chapter led to a paper awaiting publication entitled 'Ensuring Capacity Meets Demand: A Case Study' (Turner et al., 2015c). This paper was accepted for publication in the British Journal of Health Care Management in September 2015 and is included in appendix 8.

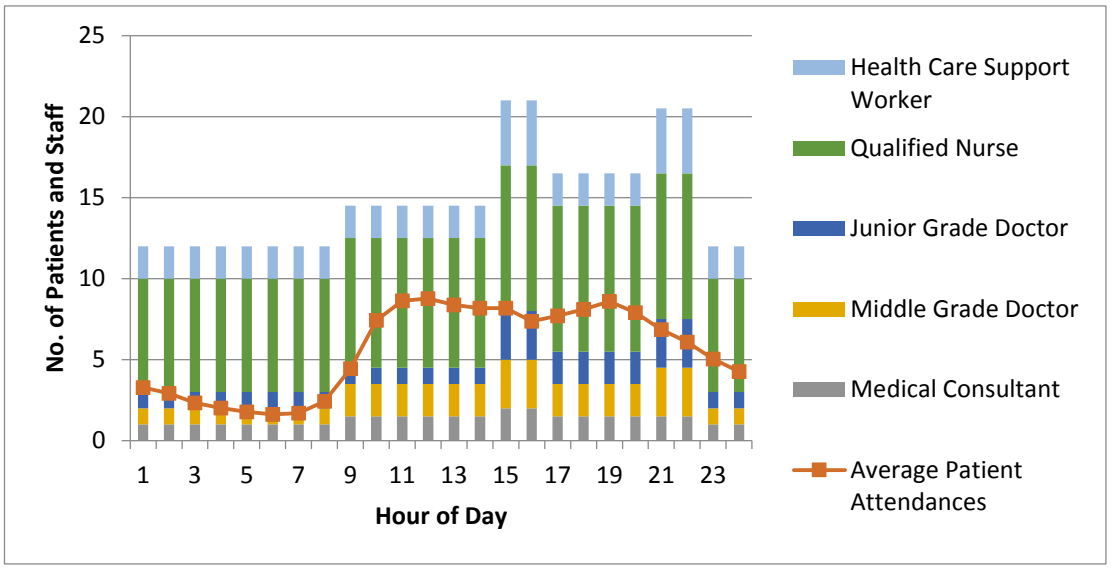
By understanding the characteristics of patient demand, Chapter 6 focussed on the 'purpose' aspect of the Purpose, Process, People (PPP) framework in the Enterprise Culture. Using the methods described in chapter 5, the purpose of this chapter is to understand its 'process' and 'people' aspects in order to address the second research question: what characteristics of the Enterprise Culture exist in the Emergency Department and what are their effects on performance against the four-hour wait target?

6.2 Planned Resource Data

Staff rotas, bed and resource capacity, and Emergency Department work protocols were reviewed on 01 April 2012. Over the following twelve week study period, these capacity elements were observed in the ethnographic study in order to understand their efficacy and influence on performance.

Staff rotas in the Emergency Department provided capacity to meet demand attendance profiles. Figure 6.1 shows the staff rota by clinical role and the average patient demand profile over the day. This graph shows only the establishment of staff planned to be on shift, however actual staff presence against this plan was reviewed during the ethnographic study because these data were not available from archive records.

Figure 6.1: Emergency Department Staff Capacity and Intraday Patient Demand



The staff rota profile did increase to meet demand throughout the day. Although there is a disproportionately higher level of staff capacity to meet patient demand in the early hours of the day (00:00 to 08:00), staff on rota were set to minimum requirements under the hospital Trust's rules to provide a safe service during these hours and not to match demand patterns. The basis of the calculation used to set the minimum requirement was not known by the Emergency Department's clinical or business managers.

However, this matching of capacity and demand was of limited significance because it considered demand only in terms of the total number of attending patients and capacity only in terms of staff headcount. By matching the productivity of staff on rota to the total number of patients in the department at hourly intervals (which will differ from the attendance pattern because the patients' time spent in the department varies), the pressure on capacity to meet the number of patients discharges required to meet the target was exposed more clearly (Womack and Jones, 1996, 55-56). Archival data were not available to measure the number of patients in the department or the factors

affecting the rate at which patients were discharged during the study period and were observed in the ethnographic study.

The Emergency Department in this case study contained twenty-two spaces in which to perform an individual patient consultation. Although these spaces were designed to meet a specific clinical purpose, for example resuscitation bays, a meaningful comparison of space capacity against attending patient demand requires data showing the total number of patients who required a clinical space at a set time. As noted, these data, and the effect clinical space has on productivity rates, were not available and this limitation was observed in the ethnographic study.

Additionally, two hundred and sixty-one beds were available within the wider hospital for admitted adult emergency patients (excluding maternity cases), although hospital policy expected a maximum bed occupancy of 95%. This would reduce the capacity to two hundred and forty-seven if the expectation was met. Examination of limited bed occupancy data revealed that the beds were regularly occupied over this level. Furthermore, fifteen additional escalation beds were available for emergency patients which were intended to be used only during times of extraordinary demand for emergency care. Also, in addition to the emergency care beds, ninety beds were available for elective care patients. The examination of the bed occupancy data also showed constant use of the escalation beds and evidence that elective patients care was cancelled due to emergency care patients taking elective care beds.

Furthermore, the Emergency Department had an attendance to admission conversion of 33.5% compared to an overall English mean of 24.1% (Department of Health, 2011b). The admission process and its effect on the performance target were observed in the ethnographic study.

Finally, the Emergency Department was under the governance of a number of policies and procedures. The Clinical Director dismissed the guidelines for performing clinical procedures and care (because these were relevant only to confidential patient care and not within the ethical approval or relevance in this research). The Clinical Director then determined that the most notable evidence of processes to assure performance against the Enterprise Culture target was the Urgent Care Standards (UCS), laid out in the

Emergency Department's Staff Handbook (SH). These locally defined standards were that all patients should receive:

1. Triage within fifteen minutes
2. Review within one hour by junior or middle grade doctor
3. Discuss plan with senior doctor within two hours
4. Bed request or referral by three hours

Adherence to these standards was observed in the ethnographic study.

6.3 Performance Data

An analysis of performance data was conducted to identify any characteristics of performance outcomes which resulted from the prevailing Enterprise Culture. Performance was measured using the Enterprise Culture's four hour wait target (Turner et al. 2013b). These data were analysed to show the distribution and variation of time patients spend the Emergency Department.

Figure 6.2 describes the overall distribution of patients' time spent in the Emergency Department and figure 6.3, how variations apply to hour of arrival.

Figure 6.2: Time spent by patients in department

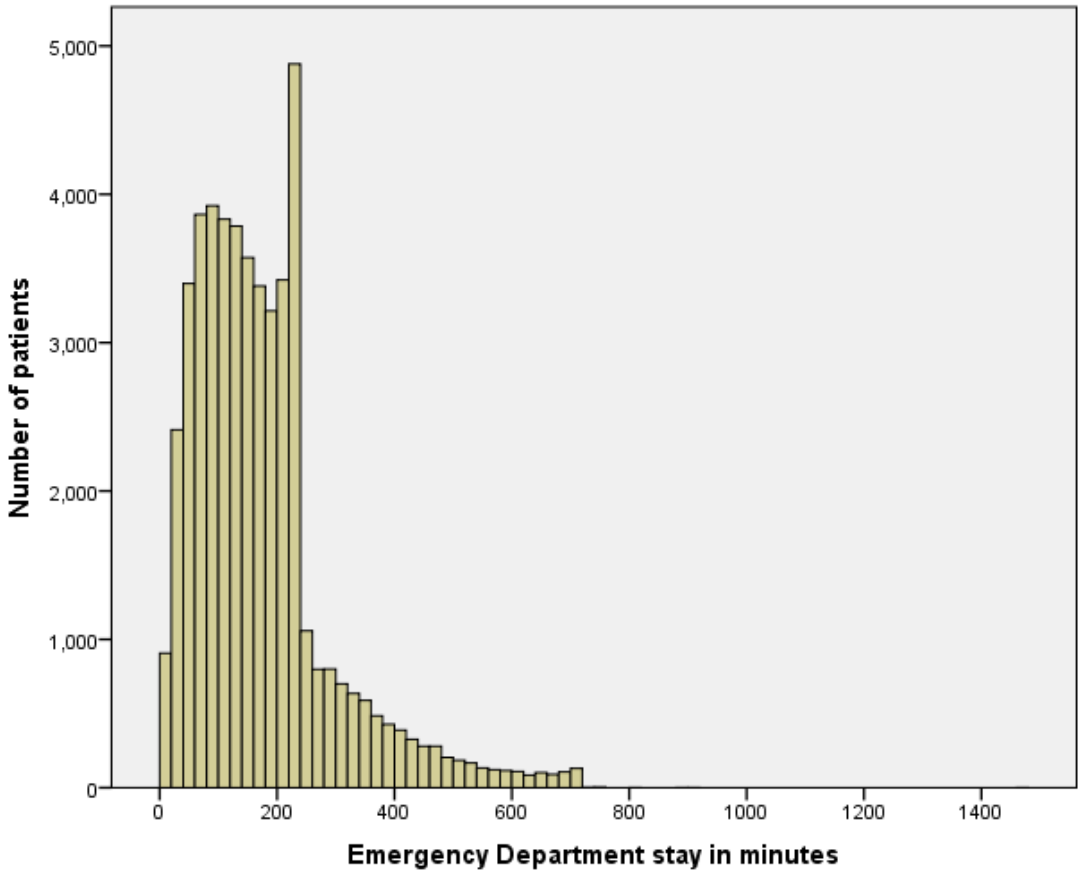


Figure 6.2 shows that the amount of time patients spent in Emergency Department was widely distributed (unseen on figure 6.2 are individual data points where patient had longer stays up to 1,462 minutes). The data show characteristics typical of patient waiting time variables. Campbell et al. describe distributions that are constrained at one end, such as hospital waiting times, as more likely to be skewed (where the tail of the distribution is longer on one side of the mean value) (2007, 38). This is because waiting time "cannot be negative, but can be very [long] for some patients and relatively short for the majority" (Campbell et al., 2007, 38). Here, the median tendency (180 minutes) is followed by a more gradual descent to a long tail, as the more acutely ill patients continue to be treated. However, an unusual addition is the spike of patients staying 240 minutes which coincides with the four-hour target. No data were available to identify any patients who may be tested to explain this distribution, such as case mix and acuteness of patients' condition and the phenomena causing the distribution characteristics were observed in the ethnographic study.

Figure 6.3: Distribution of time spent in department by hour of arrival

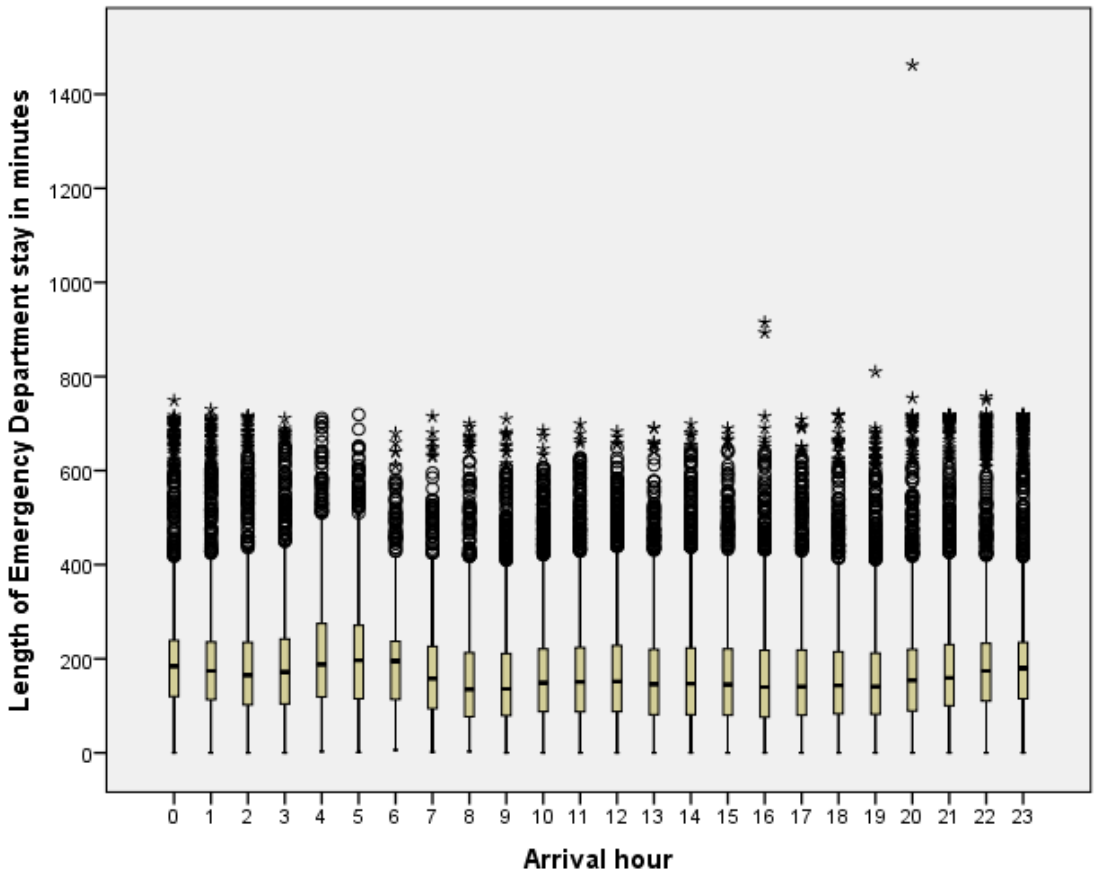


Figure 6.3 shows that the distribution of the amount of time patients spent in the Emergency Department does not greatly vary depending on the hour of arrival. The data indicate that the available capacity maintained the level of performance throughout the day. This analysis of performance led to some inconsistencies to be investigated further. For example, despite the clinician to patient ratio being higher at night, the length of stay remained the same. Challenge to the Emergency Department's ability to achieve a constant productivity rate was considered in the ethnography.

6.4 Ethnography

The ethnographic study, justified in section 4.2.2.4, which was conducted over twelve weeks from April 2012 to examine the observations identified in the quantitative analysis and described using the process and people elements of the PPP framework, produced the following key findings.

6.4.1 Process

Process, Productivity and the Urgent Care Standards

Although the UCS expectations were clearly defined in terms of times at which clinical tasks should be completed, no formal documented processes were observed to achieve them; despite evidence of many policies that affected how patients moved through emergency care within the hospital. These policies were documented in the Trust's online library, but unclear version control and out of date releases made them unreliable as a data source. A review of the policy concerning the treatment of patients requiring mental health referral revealed a complicated description in prose rather than a systematic view of the process steps necessary to complete the task. The policy documents were viewed as unpopular by many clinical staff who stated indifferently that they had to sign that they had read policies, periodically. However, a commonly accepted working practice observed and consistently followed was:

For the major stream of potential admission or trauma patients;

1. Patient triage or ambulance handover
2. Nurse observations
3. Junior doctor assessment / treatment
4. Diagnostic Requests (imaging and blood tests)
5. Registrar or Consultant doctor review / treatment
6. Nurse observations
7. Specialty referral (if necessary)
8. Patient handover or discharge

For the minor stream patients, an Emergency Nurse Practitioner or General Practitioner completed the assessments and treatments and nursing observations were not necessary.

The major stream is depicted in the summarised Value Stream Map in appendix 7 which includes points of observation discussed in this section where possible. The whole Value Stream Map showed the relationship of all of the observations and their potential to cause variation in the performance seen in the Emergency Department against the four hour wait target.

Between each step, the patient would usually wait for the next task to be completed. Twenty patients were randomly selected to have their time and movements in the Emergency Department and through the hospital, if necessary, observed. From these observations, a mean of 75 minutes of clinician to patient contact time and a median of 73 minutes was recorded. Because the data in figure 6.2 were not normally distributed a mean calculation would not represent the central tendency of the distribution (the mean of 173 minutes was affected by the outlying long length of stay patients). However the median of the data was 152 minutes showing that non-clinical (or waiting) time accounted for around half of patients stay in the Emergency Department.

The time taken to discharge a patient can be partly examined using calculation of productivity taken from Little's Law from chapter 5. Capacity and waiting time affect the rate at which patients are discharged (the denominator in Little's Law) so the ethnographic study considered the causal factors of waiting and restrictions on physical and human capacity.

Observations of the level and continuity of the Emergency Department's productivity rate, brought forward from the quantitative analysis, revealed several causal factors. Several 'people' related factors were observed to affect the waiting element of the patients' stay (discussed in in section 6.4.2). However, the factors associated with 'process' and physical capacity in the hospital's emergency care system and are discussed in this section.

Clinical Space

The effect of clinical space was not easy to evaluate as an influence of patient movement through the department. During the busy hours, when the number of patients in the department was high, the need for clinical space often exceeded that available. However, major stream patients were routinely moved out of the bays where they had

received clinical contact and waited on trolleys outside of designated bays until they were ready for the next clinical task. This frequent movement of patients made observation difficult and it was not possible to accurately quantify any cause and effect relationship between clinical space and time that patients spent in the Emergency Department. Moving patients to release clinical space clearly does absorb staff time, and hence the capacity they can provide, and affects space capacity, thus influencing productivity in terms of the patient discharge rate. The method of work where a patient is seen, left alone, moved (away from a bay and back) and then seen again opposes the more efficient PPP concept of continuous flow. In a continuous flow operation, one product (patient) is worked on continuously until completion (the patient is discharged) thus optimising clinical time and space (Womack and Jones, 1996, 22). To achieve this, however, an experiment would be required to design the process to focus on continuous clinical care and the number of bays that would be required to achieve the Emergency Department's attendance profile.

A clearer effect of limited space was observed when ambulance crews were frequently delayed in handing their patients over to Emergency Department care because assessment areas were not available. On five occasions four ambulance crews were seen to be waiting with patients on trolleys in a corridor as space was not available for a Paramedic to Nurse handover. This caused considerable tension as the ambulance crews were keen to be back in service (and had their own target for handover times) and the nurses were not able to safely accept the patient into their care. Patients waited for up to 60 minutes for a handover.

Indicators and Use of Data

Other factors which affected the time patients spent in the department were observed through the use of data generated within the Emergency Department. Patients attending the Emergency Department were recorded on the Caydar system (the Emergency Department's patient record database) which enabled staff to update the patient's status throughout their stay (until discharge or admission to a hospital bed). Caydar could display the patient's location (which clinical bay they occupied, for example), care status (for example awaiting triage or blood test results) and the duration of their stay. It would not, however give an audit trail of all the clinical spaces the patient

had occupied. Although the Urgent Care Standards (UCS) time targets could be recorded in within Caydar, the capture of the data was not consistent. During the data extraction, the Caydar categories relating to UCS were disregarded because they contained insufficient data, and in the ethnography no evidence of consistent use was observed, particularly when nursing staff were under pressure. This meant that no detailed planning for a patients' progress in accordance with the UCS was made in Caydar. As a consequence, no quantifiable evidence of common issues or analysis for problem resolution was possible. In PPP, this is a key concept encapsulated by the Plan, Do, Check, Act (PDCA) cycle. PDCA looks to improve productivity through the steps of (Maruta, 2012):

1. Plan – study the process and plan small scale improvements.

2. Do – carry out small scale improvements.

3. Check – observe the effect of the improvements.

4. Act – evaluate and repeat the cycle if necessary.

Caydar was displayed in the Emergency Department on a large touch-screen whiteboard so that clinicians could update a patient's status easily and details were visible to all staff. The same information was available in read only format to an Operations Centre: a facility used to optimise bed utilisation by tracking bed availability and admission requests. Only two commonly used features of the Caydar system were observed. Firstly, patient location was updated if they moved from one bay to another (although this was often delayed and occasionally not done at all). Secondly, a summary of the time patients spent in the department was displayed in order of the longest length of stay patients. Those who had been in the department over three hours were coloured red, two to three hours yellow, and others green.

The summary data were primarily observed to be used by managers as a means to control performance: to ensure that all patients were discharged in less than four hours. Two levels of management were seen to actively use and respond to these data: a co-ordinating nurse in the Emergency Department and Operations Centre managers.

Although no formal process existed for managing patients' care plans, and actual performance was not monitored against the UCS, the co-ordinating nurse was appointed to help ensure that patients flowed through the department and that issues causing delay to care were resolved. The co-ordinating nurse was fully qualified but was supernumerary to the clinical staff to allow full attention on resolving patient flow issues. This role was separate to the Matron, Nurse Consultant and Sister who had mixed clinical and administrative duties in the Emergency Department. The co-ordinator role should have been assigned to a Junior Sister on duty, however the restrictions of staff meant that this was observed to occasionally be undertaken by an experienced staff nurse. Additionally, when pressure in the department due to large numbers of attending patients, acuteness of the cases or both was high, the co-ordinating nurse left the position to undertake clinical nursing tasks. The co-ordinating nurse had two key prompts for work allocation: requests from clinical staff to intervene with delays to patient treatment and the colour coded time status for patients approaching the four hour target (often emphasised by pressure from the Operations Centre managers).

The requests for intervention from clinical staff were only observed during times of high patient attendances and because of the limited capacity of the co-ordinating nurse, the clinicians either tried to resolve the issue themselves or waited for the co-ordinator to become free. Patients' time status however, often took priority in the co-ordinators role and this was seen particularly as a patient approached a breach of the four hour wait target. At this point the managers from the Operations Centre, who accessed the same data as the co-ordinating nurse, were seen to request details from the co-ordinating nurse and would also be involved in ensuring that the patients were either discharged from the Emergency Department or admitted in the time limits. Examples of intervention by Operations Centre Managers included delayed referral requests from the Emergency Department to the Clinical Director of the required specialty and locating Physicians or Surgeons to discharge patients to free bed space. The later intervention usually involved Physicians discharging a patient who was named under the care of one of their colleagues. Considerable tension between the separate Physicians and between Physicians and the Operations Centre Managers was observed. These tensions were a consequence of the rigid nature of ownership of patient care: when a patient is named

to a consultant's care, the consultant is legally responsible for the patients care. Consultants observed were often reluctant to allow major decisions for care to be taken by other clinical staff.

The Operations Centre was intended to ensure that patients were placed in the appropriate clinical environment for their diagnosis and that discharge or transfer to another care provider was conducted safely and in a timely manner. Various indicators measured the success of these interventions, namely:

- The number of medical specialty patients in a surgical specialty ward, or vice versa (known as outliers)

- The number of patients cared for in the correct specialty, but the wrong sub-specialty wards (i.e. a stroke patient in a respiratory ward, known as off-template).

- The number of patients medically fit for discharge from the hospital (those patients that the doctors were ready to discharge but could not because either no onward care, such as a nursing home bed, home appliances, therapy packages or medication was available. Known as delayed transfer of care – DTOC).

The hospital also targeted a bed occupancy level of 95% to ensure that adequate space was available for emergency situations (infection control or major accidents, for example). However, during observation, with one exception, the hospital never had a bed that was either not occupied or assigned to a patient awaiting admission. The exception was one Friday evening when the hospital made, in the words of the Operations Centre manager 'a big push to make space for the weekend admissions': although this effort only improved occupancy to 97% and the beds were fully occupied by 13:30 the following day. This pressure to provide beds in which to admit patients led to decisions which caused patients to outlie or become off-template. In order to make such decisions, the manager identified DTOC patients and moved them to an inappropriate ward in order for the more acute admission patient to be cared for in the right place. Two clear consequences were observed from this. Firstly, the DTOC patients could be moved up to six times in the hospital stay in order to make space for admitted patients; absorbing clinical time through patient movement and handover. Secondly,

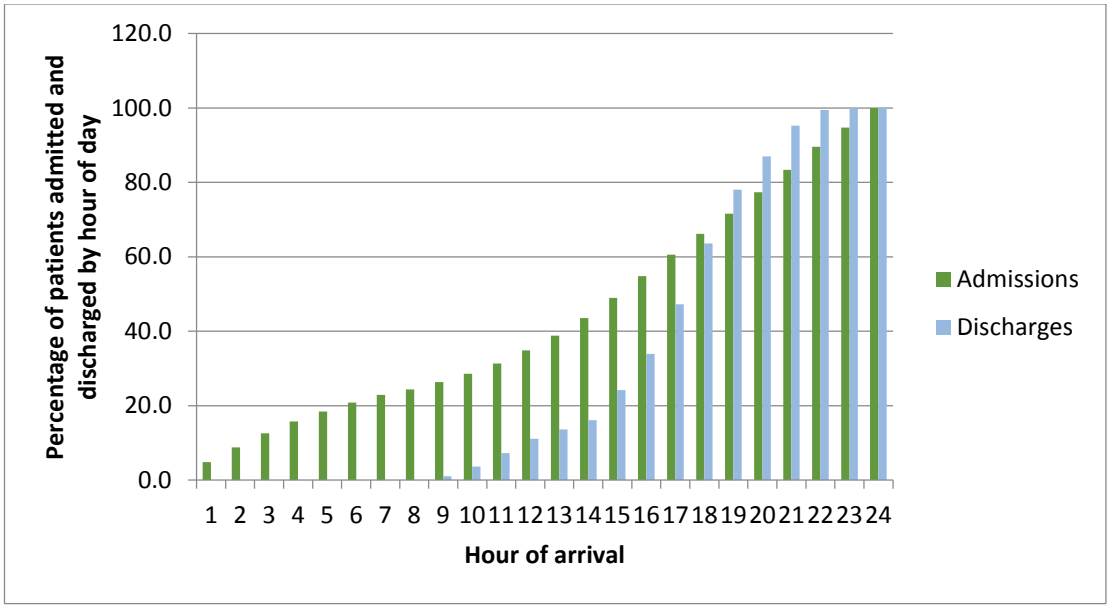
the DTOC patients observed were elderly and often frail, and nine patients were observed to become unfit for discharge after contracting a hospital acquired infection. This caused the patients to be moved again to the appropriate ward for their care.

Patients Avoiding Breach

The spike of patients leaving the Emergency Department just before a 240 minute stay (the point at which they would have breached the Enterprise Culture target, seen in the quantitative analysis was observed to be caused by intervention and not the natural process. The continual build-up of waits in the process caused an accumulation of time which, in accordance with Little's Law, would extend with the increase in patients in the department. However, the Operations Centre reacted to time status data in order to avoid a breach. Negative effects on the other indicators of care were accepted as an unfortunate consequence. No evidence was seen of planning towards a sustainable solution to outlier or off-template patients, although a nurse was employed to resolve the more complicated DTOC patient transfers. During one Tuesday morning in the ethnographic study 71 DTOC and other medically fit patients occupied the hospital's beds, the lowest was 24, a Friday evening.

Furthermore, no evidence was seen of the hospital's emergency care system having planned capacity to meet demand profiles of attending and admitted patients. Figure 6.4 shows the imbalance between percentage of patients admitted per hour and those discharged on ethnographic study days. This imbalance produced a build-up of patients waiting to be admitted (absorbing capacity resources through occupation of the Emergency Department clinical space and additional nurse observations), and admissions to inappropriate wards to meet the patients care and delays for newly attending patients. Most Operations Centre interventions to avoid a breach were caused by a shortage of beds available to admitted patients.

Figure 6.4: Profile of medical admissions to discharges



Many reasons were observed for the imbalance between admissions and discharges. Most prominent was the common practice for medical wards to hold ward rounds in the afternoon. After a decision to discharge was made in the ward round, delays from writing the discharge document, ordering take home drugs from the pharmacy and arranging transport for patients contributed to bed occupancy late in the day. No prior planning for patients who could potentially be discharged on the ward round was observed, and all of the above activities were reactive. As a result, the pharmacy and transport providers were unable to schedule and optimise their resources and had to manage batched requests for many patients.

Admissions from the Emergency Department

As noted in the quantitative analysis, the attendance to admission conversion rate, was a cause for concern to be investigated in the ethnographic study. Admission decisions were common in the fourth hour of a patients stay. Delays and inconsistent practices from referrals by Emergency Department doctors to other specialties (due to specialists having their own capacity issues and separate targets) contributed to many breaches of the four-hour target or late admissions. Although no evidence was available to show the association of the high conversion rate with decisions to admit a patient to avoid a breach of the four-hour wait target, no analysis of higher than expected levels of acuteness for the attending patients is available either.

Other Causes of Patient Waits

Other reasons for patients' long stays in the Emergency Department were observed. Some delays were caused by aspects of the emergency care system outside of the Emergency Department. Patients requiring imaging diagnostics were observed to be delayed particularly when the Radiology department outpatients' service was closed. At these times only one radiographer was available to manage the emergency workload and demand was often seen to exceed the available capacity which resulted in patients waiting more than two hours for their procedure. Another major impact came from referrals to mental health services. The mental health assessors were employed by a separate health care Trust which provided service across a wide geographic region and a lapsed time of up to four hours in responding to a referral was observed on several occasions. However, good practice which reduced patients' time in department from services outside of the Emergency Department was observed. The presence of a physician to assess potential medical admissions on attendance in the Emergency Department helped to overcome late referral problems and occupational therapists and physiotherapists also contributed to reduced waits for patients. These services were not permanently available to the Emergency Department however.

Further, less common, observations which were seen to affect the patients' time spent in the department relating to process and physical capacity were:

- The co-ordinator aimed for patients to be seen in chronological order unless they had a clinical priority, however junior doctors were seen to select patients notes based on their own preference. Files were usually prioritised, firstly in order of clinical acuteness and then chronologically from arrival. When there were no priority patients, notes were seen to be taken out of chronological order.

- Delays in obtaining pathology results which were caused by request forms and samples being placed in a box at the nurses' station and sent to the laboratory in batches by a non-clinical administrator. The oldest requests in the batches were observed to have an additional twenty five minute wait as a result of this process.

- Clinical time was spent locating patient notes. Boxes at the nurses' station were used to hold the notes unless they were needed at a patient's bedside and were occasionally not returned or placed back in the box after use.

Summary

Pressure to meet the target is apparent, however two clear findings emerge from the observations.

Firstly, the process for moving emergency care patients through the hospital emergency system was not sufficiently defined, nor was capacity provided to meet the patient demand profiles. This meant that training could not be given to new participants in the department in order to enact repeatable performance.

Secondly, the data and controls were used to prevent breaches of the four-hour target, not to maintain the UCS which was designed to enable the Emergency Department to achieve the four-hour wait. No data capture to monitor the patients' progress against a plan was available and data could not be used retrospectively for problem solving purposes.

6.4.2 People

The analysis of capacity revealed that clinical staff were usually present in the department in accordance with the planned rota. However, three principal concerns emerged from the observations of social interactions and physical resource capacity which affected the performance of the Emergency Department: a reliance on staff who had little or no knowledge of the department, clinical staff being absent from the department and relationships between the department and other areas of the hospital's emergency care system.

Staff on duty frequently contained a significant amount of bank or agency nurses (and on occasion Consultant and Registrar grade doctors) who did not know the department, its working practices and management systems. This caused variability in performance as no formal procedure was available and no mechanism was in place to induct the staff into the generally accepted working practices.

Nurses were also assigned to the Emergency Department from other wards and clinics within the hospital in order to achieve the required duty rota. Tensions were observed between the nurses assigned from other areas (who were often reluctant to work in front-line emergency care) and the department's own staff.

Qualified nursing time was frequently observed to be spent away from the department escorting patients or performing other non-clinical activities (checking bed availability and performing reception duties, for example) when more suitable, unqualified staff were not available. The staff absorbed in transporting patients was a significant contributor to fragmented care. During particularly busy periods, matrons and hospital managers were observed to aid porters in moving patients. Although hospital policy expected the porters to be accompanied by a Health Care Assistant when moving in-patients between clinical areas nursing staff routinely undertook the task. The hospital's policy was for patients whose condition was assessed as a clinical risk were to be escorted by a qualified nurse, however many patients who were deemed low risk were observed to be escorted by qualified staff. To facilitate the admission of a patient, nurses would often call the receiving ward to check the status of bed availability and transfer time. Nurses were observed to spend many minutes waiting for these calls to be answered and on occasion the nurses were seen to walk to the ward to make the enquiry in person after becoming frustrated by the lack of response.

Many relationship and social tensions were observed during the ethnographic study. Clinicians within the Emergency Department were seen to advise each other, and particularly bank and agency staff, about who to contact and avoid in other parts of the hospital and how to by-pass usual practices if a key person was not on shift at a particular time. Far from Toyota's average people managing brilliant processes, the people within the system were often more influential than the process.

Additionally, a culture which stimulated tensions and reactive behaviour was observed within the hospital. At the management level this was seen in pressure to meet the four-hour wait target and the Operations Centre managers were visited many times by hospital Directors and Commissioning Trusts to explain performance results under tense conditions. An interesting interaction between a Director and Operations Centre manager following a Commissioner's visit concluded that performance against the four

hour wait target must not be in the lower quartile with its peers (other providers within the region). The prominence of the Enterprise Culture target to exceed locally defined care needs was clear as was the statement of motivation: not that they wanted to be the best performers, but that they did not want to be the worst.

Within the Emergency Department, the fear created by performance against the target was also observed. Relationships between departments and individuals made a greater impact on patient flow than process and protocol (an Emergency Department patient was often seen as an Emergency Department problem unless a good relationship between departments or individuals existed). Emergency Department nurses contacting wards to receive admitted patients became very emotive when the patient transfer was delayed. Some departments also had separate targets, such as surgical wards having targets to provide (and certainly not cancel) a patient's elective surgery because the demand for emergency patient admission was high.

6.5 Conclusion

From the limited quantitative data available, a description of the planned capacity characteristics of staff and physical space was made. However, no data describing the capacity actually provided was available by which to assess the impact of capacity against demand. The profile of patients' time spent in the department revealed a characteristic spike of activity just before the four-hour target. These limitations and further characteristics of the Enterprise Culture were identified in the ethnographic study and presented by Process and People themes.

The Enterprise Culture was implemented in an Emergency Department which was managed and evaluated separately from the whole emergency care system. The Enterprise Culture's four hour wait target was prominent in both process and people aspects of the Emergency Department (and the wider operational management). Characteristics in both aspects were observed to affect performance.

Processes were found not to be formalised and although a commonly accepted practice existed, it did not support the expected care standard targets which underpinned achievement of the Enterprise Culture four hour wait target. The characteristics of the processes and people within the emergency system resulted in excessive waiting time

for Emergency Department patients. Management interventions were commonly used to ensure patients did not breach the four hour target and these actions adversely impacted on other aspects of emergency care. The process issues, staff unfamiliar with the hospital's working practices, rigid organisational structures and fear of poor performance often caused difficult working relationships within the hospitals' emergency care system.

Insufficient planning to match systemic capacity and productivity to demand was apparent. This resulted in fragmented intelligence about safe patient flow within the system and difficulty in understanding where patients should be at what time to receive the best possible care. In summary, the findings of the analysis and ethnography reveal that:

- Analysis of patient demand and calculation of planned processes and productive resources to meet it did not exist. There was no mechanism to continuously monitor and resolve performance gaps.

- The emergency care system was fragmented and often reactionary. Disparate targets, ineffective relationships and a deviation from care standards produced a culture where management intervention was necessary to achieve the four hour wait target.

The functional lines of control (management and clinical specialism) discussed in the Process section and the ineffectual People relationships that resulted from them represented a major difference between PPP and the Enterprise Culture. The process and people characteristics of the Enterprise Culture present in the Emergency Department, and the wider hospital emergency care system, do not support achievement of the Enterprise Culture purpose: attaining the four hour wait target.

7 Results: Achieving the Aims of the Enterprise Culture

7.1 Introduction

The chapter has two purposes. The primary purpose is to examine the research hypothesis: that the private enterprise framework adopted by the Emergency Department is successful in achieving the aims of the Enterprise Culture. Also, following limitations in applying practical research, an additional purpose is to discuss barriers to conducting a study in a small, rural District General Hospital (DGH).

This chapter records the results from two stages in the research methodology. Firstly, the validation of findings from chapters 5 and 6 is discussed, using the methods described in section 4.2.3. Secondly, a discussion of the efficacy of a subsequent intervention of the case study site within the context of the Purpose, Process, People (PPP) framework, using the methods described in section 4.4.1. These stages led to the paper, Implementing Emergency Department Performance Improvement Through the Enterprise Culture which was accepted for publication in the British Journal of Healthcare Management in October 2015 and is included in appendix 8.

7.2 Validation of the research findings

Validation from participants within the system provides the research with a critique of the findings and was chosen because they "have access to additional knowledge of the context [of the system] … that is not available to the ethnographer" (Hammersley and Atkinson, 1995, 228). However using Emergency Department staff to validate the findings presented structural barriers to the research.

As noted in the Methods chapter, only a small number of permanent, experienced staff were available to be participants in the research. However, even after planning changes to the original protocol, further barriers to the availability of those participants and to that of clinical management resources reduced the potential knowledge with which to validate the system. These barriers to participants' availability were associated with two unplanned events. Firstly, the participants employed in clinical positions were not able to convene in planned groups due to staff time pressures and additional long-term illnesses of permanent employees. The time that clinical staff were able to give to non-

clinical activities was restricted and duty rotas did not coincide. Secondly, during the validation process the Clinical Director resigned his position. The Clinical Director had sponsored the study and was keen to implement the intervention. Additionally, there was an increased risk to service continuity due to the department retaining potentially only one substantive Consultant after the Clinical Director left. Therefore, the decision was taken to change the planned timings of the validation, the implementation of the intervention and evaluation of the success of the intervention. As a result of the barriers, four of the six participants contributed to the validation of the research.

In the open Delphi round, participants were asked the question: which controls and practices are, or have been since April 2011, in place to ensure that time-led (four-hour patient discharge or admission) targets are met? Although all four respondents made comments about the controls and practices, all of their responses had been observed during the ethnographic study and no new knowledge was added to the findings.

The nominal group members were sent the analysis and summary of the findings discussed in chapters 5 and 6 one week in advance of the group meeting. Additionally, a meeting was arranged with each participant separately to discuss the findings and address any questions or points of clarity. During the group meeting, participants were firstly asked to comment on potential inaccuracies and raise any queries about the quantitative capacity and demand analysis they had been sent. No comments or queries were recorded. Secondly the participants were asked to rank their agreement of the findings using a nine point Likert scale. They were asked how much they agreed with the following statements:

1. The patient demand data (shown in the figures in chapter 5) are an accurate description of the Emergency Department's demand.

2. The planned staff (shown in the figures in chapter 6) and the physical space analysis (described in chapter 6) are accurate reflections of the Emergency Department's capacity.

3. The patient time in department data (described in chapter 6) is an accurate description of the Emergency Department's performance.

4. The commonly accepted working practice for major patients (described from the ethnography in chapter 6) is an accurate description of the Emergency Department's patient pathway (local term).

5. The Urgent Care Standards exist to support the four hour wait target, but are not routinely recorded in Caydar (the Emergency Department patient recording computer system).

6. The findings of the ethnographic study, discussed by the group, are a fair assessment of the capacity and performance issues of the Emergency Department.

Consensus was achieved in each question by a median score for all participants in the 7-9 range described in section 4.2.3.

The validation through consensus represents another barrier to research in the small, rural DGH case site. Changes to the original protocol and subsequent amendments to manage difficulties of engaging participants still only managed to achieve responses from four out of the six signed to the study. Staff illness and relocation has a significant impact on a department and its ability not only to engage in clinical activities but also improvement and research work.

7.3 Intervention

To define the clinical process to achieve the intervention (to safely transfer observation patients to the appropriate place of care), the Emergency Department consultants considered several sources of information. The findings from this research, their own tacit knowledge of local needs and limitations and from a recent clinical audit which highlighted failings in patient care were considered to identify a performance issue.

The performance issue identified by the consultants for intervention was the treatment of a cohort of emergency care patients requiring clinical observation for at least twelve hours after attendance to the Emergency Department. These observation patients were defined as those who had presented to, and been assessed and treated in, the Emergency Department. Although they did not require admission to an acute bed, these patients were kept under observation for a limited time. The treatment of

observation patients was chosen because it represented a critical local need which was caused by a gap in clinical control (namely a lack of agreed process) within the Emergency Department and the Clinical Decision Unit (CDU). Observation and admitted medical patients were transferred to the CDU prior to their discharge or relocation to a specialty ward.

The intervention to ensure that observation patients received quality care through a process was:

1. Identification of patients requiring observational care but not admission to an in-patient bed in a specialist ward.

2. The creation of an adequate care plan and drug chart was created for the patient by Emergency Department staff (the term 'adequate' related to health care professional standards, but was not clearly defined).

3. The securing of a bed for the patient in the CDU.

4. Safely transporting the patient and ensured that a nurse to nurse handover accompanied the transfer of care from the Emergency Department consultant to the CDU consultant physician.

The indicators assigned by the consultants to measure success in the intervention were:

- Whether the observation patient had a care plan agreed and documented by an Emergency Department doctor or nurse.

- Whether a drug chart was complete when the patient was transferred to CDU.

As these indicators were essential elements of clinical care 100% compliance was expected.

In defining criteria for the intervention process, the Emergency Department consultants and the consultant physician from the CDU considered evidence from the trust's quality audit recommendation, the validated findings of my research and other best practice techniques (for example for ECIST: mentioned in chapter 2). These criteria were accepted or rejected for use in the intervention process through consensus in the Delphi

group questions. These questions gauged respondents' agreement that the criteria were necessary and the analysis of the responses was used by the consultants to create the intervention guidelines detailed in appendix 4.

Following the implementation of the intervention, the Clinical Director reviewed compliance to the defined process. From the seventeen sets of notes reviewed, fifteen patients (88.2%) had a clinically appropriate plan and drug chart. However, using the one proportion test in the Minitab statistical software, this infers with 95% confidence that performance fell between 63.5% - 98.5% of the population of patients using the pathway during that week (events = 15, trials =17; where events were successful patient transfers and trials were the total number of transfers made).

7.4 Evaluating the intervention

The second ethnographic study revealed that the intervention was not routinely followed, particularly in times of great pressure (from high patient volume or where the acuteness of some patients absorbed a lot of clinical time). Of the fourteen patients followed, only nine had visible compliance of a care plan and drug chart being transferred between Emergency Department and CDU staff (64.3%). Although I did not review the clinical quality and appropriateness of the care plan and drug chart (due to ethical considerations, no additional information was requested from the Emergency Department by CDU staff after the transfer. Although all of the non-compliances happened at times when four-hour wait pressures were most intense, four compliances were also noted during this time. The compliances were all observed to be carried out when a permanent nursing staff member was present from either the Emergency Department or the CDU during the patient handover. However, some non-compliance were also attributed to permanent nursing staff. During the non-compliant handovers, no challenge or discussion was observed about the failure to meet the intervention.

Also, no mechanisms were observed to monitor the indicators and resolve issues when performance below standard was evident: although the intervention process and indicators were described, monitoring performance was not. The lack of monitoring in real-time against performance levels was observed as common practice in the hospital as performance against policy was managed through a periodic audit by the Trust's quality department.

The semi-structured interviews with four participants followed the format described in table 7.1.

Table 7.1: Semi-structured interview format

Opening Question	Objective
Please could you give your views on recent changes to the observation patient pathway?	To link the perceptions to the post implementation evaluation (review of compliance and the subsequent ethnographic observation).
Which barriers prevent compliance (implementing and sustaining) of this pathway?	To examine the negative culture and behaviours affecting the compliance and relate these to the post implementation evaluation.
How does this compare to other pathway changes?	To identify these negative differences between this intervention and other Enterprise Culture changes.
What enabled positive compliance to the pathway?	To examine the positive culture and behaviours affecting the compliance and relate these to the post implementation evaluation.
How does this compare to other pathway changes?	To identify these positive differences between this intervention and other Enterprise Culture changes.
What are your views on indicators and targets when complying with the pathway changes?	To identify if there any types of indicator that affect decisions to provide care.

Results from the interviews showed general beliefs common to all participants (one consultant, one registrar, one business manager and a senior nurse). Table 7.2 demonstrates how themes (denoted by bold type at the top of each box) were developed from a sample of quotes coded from the transcripts and in appendix 5 an example coded transcript is recorded.

Table 7.2: Key themes from the interviews

Intervention success: • 'Everybody's had their chance (to contribute to the intervention). If you listen hard to what people are saying and doing what they're	**Influence of the Four hour wait target:** • 'There should be something, a target to achieve otherwise we'll just go back to twelve hour waits'.

saying they feel that this is not being done to us'. • The intervention has 'ensured that these patients are dealt with appropriately, they're not hanging around'.	• 'So any patient sometimes, if they are close to four hours, they are plucked from A&E and dumped in CDU as an observation patient. Or sometimes if doctors are slow or they pick up a patient at the third hour - so they might not finish the full assessment by four hours'. • 'The management trying to meet the four hour targets when it precedes the patients safety'.
Staff availability: • 'If we see 150 patients a day and 50% are ambulance patients, junior doctors can see one ambulance patient an hour. It cannot work with our numbers'. • 'There are training issues as well. If you see in these last two years the changeover of staff then a lot of staff left, a lot have been recruited. Most of them are undertrained and lack basic skills sometimes and these things impact on the work of A&E.'	**Organisational relationships:** • Emergency department patients 'weren't given the same credence in CDU'.

Firstly, the overall perception was that the intervention had led to greater patient management and care and as a result was successful. This success was attributed to staff involvement in defining the issue and the process by which to resolve it which was deemed to be in contrast to a more common approach of 'being told how bad we are

and where we need to change'. Common resentment was evident of criticism the Emergency Department received in performance of meeting patient demand, rather than performing clinical tasks.

Barriers preventing compliance with improvement interventions were seen to be caused by the predominance of the four hour wait target in setting patient management activities. Although it should be noted that the influence of the four hour target was a key theme and seen as useful as an aim to prevent patients 'waiting twelve hours' in the Emergency Department which some staff remembered as routine performance from before the target was introduced. However, this view was qualified with the need to balance time based targets with other measures.

The provision of adequate, well trained staff to deliver quality care and participate in improvements was another key theme. One participant recommended that staff levels were calculated as a percentage of patient demand with a weighting to consider additional staff time for by patients arriving by ambulance. The participant wanted to draw attention to his perception that 'we have more ambulance patients (as a percent of the total attendances) than other hospitals I have worked at'. Staff availability was seen as a barrier to participating in and following improvement interventions. However, concerns were raised about the staff who were present because of perceived training and clinical competence issues and unfamiliarity with the hospital caused by high levels of staff turnover and a reliance on agency nurses and doctors.

The final key theme concerned the relationships present in the hospital and how the Emergency Department was perceived in the local health care environment. Emergency Department staff felt that patients attending the department were seen 'as their problem' by the rest of the hospital and the wider emergency care system. Acknowledgement was also made of a sometimes 'fractious' relationship with the Operations Centre managers and other parts of the hospital emergency care system.

Other barriers to implementing improvement interventions were:

- Policy decision makers not working in or understanding rural health care and rural patient needs to care for patients 'spread thinly' over a large geographic catchment area.

- A lack of consultant presence to make decisions, particularly around 'whether to admit patients'.

- A significant cultural tension from clinical staff who do not 'believe in' a target outcome.

The intervention was viewed positively by the participants because it addressed a performance gap that clinical staff identified as a local need - rather than a response to central or managerial directives. This was considered important and the 'right thing' for patients. Clinical staff had their views sought and included in the in the intervention. Although, this intervention was viewed as a clinically driven, patient focused resolution to a local issue, no comments were made by the participants about the proportion of non-compliances.

Targets and indicators were not so enthusiastically received, however. One participant, for example, did not believe that full compliance was possible or necessary, stating that decisions on patients' care were 'likely to be based on the patient in front of you and complying for all patients could be a waste of time'. Another participant agreed and considered that targets and indicators were good, but needed to be triangulated against quality of care, patient experience and time. The use of targets and indicators were accepted but the performance needed the 'hows' which were deemed appropriate staffing and training to perform well. As noted, no assessment of the low compliance rate was mentioned, which may have been due to the lack of mechanisms to monitor the indicators and the desire to qualify performance against with quality factors.

Other notable findings from the interviews were an open acknowledgement of relationship issues between the A&E and CDU departments and an effect on patient waits which corroborates the findings from the ethnographic study. Emergency Department patients were seen as an Emergency Department problem and not as patients in a multi-disciplinary process unaffected by organisational boundaries. Additionally, managers had faith in a move towards a national ambulatory care model in the future and believed the intervention was a step towards this.

7.5 Discussion

In evaluating the hypothesis that the Enterprise Culture framework in the Emergency Department is successful in achieving quality and efficiency improvements, the following key aspects of the PPP framework were identified. Firstly, the intervention and its success criteria addressed local needs which are identified as desirable factors in the effective use of performance indicators and improvements to efficiency and quality (Turner et al., 2013b). Additionally, the process was well defined and captured the expertise of a wide group of stakeholders who had a clear view of the purpose in their approach to problem solving that Womack et al. consider important (2007), although involvement from participants within the Emergency Department was limited for the reasons already noted. Finally, the effect of clinical managers guiding participants' knowledge to improve performance of a clearly defined purpose demonstrated fundamental principles of PPP framework problem solving methods (Turner et al., 2013b).

However, sustained and complete compliance was not achieved and other key aspects of PPP were absent. All performance 'is the result of a process' (Womack, 2005, 3), but to achieve success, people must enact the process unless a need to resolve an immediate problem occurs (Womack et al., 2007). Some evidence of the departmental relationship concerns from the ethnographic study described in chapter 7 remained when studying the efficacy of the intervention and may have also contributed to non-compliance. In particular, because of reliance on agency staff, people may not have been or felt fully competent in enacting the process. Training new staff to be competent in local procedures is especially difficult where permanent, experienced staff were engaged in clinical activities to the extent that they were not available for development and training.

Because the intervention's indicators were not monitored, or evidenced by the receiving CDU, resolution of performance issues was not possible and failure to comply was only evidenced anecdotally and without closure of the issue. A dichotomous phenomenon was revealed through the evaluation of the intervention. Although the expectation was originally for the intervention target to be for 100% of observation patients to have a care plan and drug chart however in the interviews this was seen as excessive and a

potential reason for non-compliance (clinical discretion rather than the predominance of process). Additionally, there was a common theme for the process to be monitored through periodic audit (which would sample a small number of patients using the process and add delay to improvements) rather than a continuous review of all patients. Continuous review of patients would ensure that any problems could be addressed and either immediately resolved or put in abeyance (if appropriate) using a PPP monitoring system. The possibilities to make improvements to efficiency and quality enabled through this Enterprise Culture intervention are limited because of the measurement system.

Although the intervention represented a localised issue for emergency care patients, it did not address the key purpose of the Enterprise Culture: achievement of the four-hour wait targets. Observation patients account for an average of twelve out of the daily of 133 daily attendances, but the consultants' choice of intervention was not based on quantified information, rather on what felt right clinically and what would make an improved service. An intervention to provide capacity to meet demand and relieve four hour wait pressures would have relied on resources throughout the emergency care system, not just internally to the Emergency Department or even the hospital, but involving ambulance providers (acute and patients transport), NHS primary care and commissioning Trusts and care homes for example. The limitations of organisational restraints and internal departmental rigidity may have affected the selection.

The intervention could not proceed as it was originally intended: to address the research hypothesis using an adequate sample of participants and an unrestricted methodology. The limitations from structural barriers to research both in terms of planning the method (potential participants and sample restrictions to evaluate the intervention efficacy) and in the live setting (the lack of availability of participants and the effect of losing a consultant from the study) presented a limitation to the study. However, the limitations provided useful outcomes, firstly as an introduction to the difficulties of such enquiries to an aspiring researcher but also as a key finding to the limitations of a small Emergency Department to actually enact the underpinning principles of improvement from the Enterprise Culture policy. Reflecting on the difficulties of planning such an enquiry in a small, rural Emergency Department, I considered alternative preparation and methods that would have mitigated against the problems I encountered at the

planning stage. Although initial investigations into the restrictions of staff and alternative methods could have been employed, I remain confident that the justification to proceed was reasonable. Importantly, I also question whether using an alternative should have been considered: PPP demands that the best people are used as leaders, mentors and problem solvers and showing that they are not available through the Enterprise Culture is a significant finding.

7.6 Conclusions

Through this intervention the research has:

- Identified structural barriers to research in a rural DGH.
- Introduced an intervention in this live setting.
- Conducted research to evaluate the effectiveness of the intervention given the structural barriers.

These findings are useful to clinicians looking to introduce similar interventions and future researchers in comparable live settings.

Although a process capable of resolving a locally identified performance issue was implemented, problems with availability of competent staff to enact it affected its efficacy. The availability of sufficient experienced staff was also evident in the limitations of applying the protocol and validating the research. Pressure to achieve the four-hour target and inadequate volume of staff who were competent in enacting the process were responsible for the below expected compliance.

The intervention did not widely test the Enterprise Culture's ability to achieve quality and efficiency aims, however the effects from the failure to follow the PPP framework in such a study presents a concern. Insufficient evidence was found to support the hypothesis that the Enterprise Culture in the case study Emergency Department was successful in achieving quality and efficiency improvements.

8 Discussion: Meeting the Needs of the Local Emergency Care System

8.1 Introduction

The development and aspirations of the Enterprise Culture are now reconsidered in light of the findings from the study. Tensions between policy and local emergency care needs and other effects of the Enterprise Culture in a rural District General Hospital (DGH) are summarised and the limitations of the research are discussed. Conclusions about the efficacy of the Enterprise Culture are also considered. The gaps between the Enterprise Culture and the Purpose, Process, People (PPP) framework and potential ways to address the critical gaps within an emergency care system are discussed along with recommendations for policy.

The purpose of the chapter is to address the fourth research question: How can the private enterprise best practice framework or other best practice methods be introduced to meet the needs of the local emergency care system?

8.2 Review of the Enterprise Culture Purpose

The Enterprise Culture emerged from the convergence of health policy as the major British political parties started to address financial pressures through the adoption of commercial best practice to create efficiency and quality (Wall and Owen, 2003, 34-39). A reduction of state monopoly in health care provision and acceptance of commercial practices was argued to be a policy move to tackle poor performance in cost control, equity in health care provision and inefficiencies (Turner et al., 2013a). Short electoral cycles and a focus on health care provision rather than health improvement have impacted on the efficacy of this policy, however. The cost to benefit return of the increased spend in health care provision under the policy also remains a point of debate (Pollock, 2005, 260).

The Enterprise Culture has several defining elements. Firstly, many targets and indicators are used to measure performance – within Emergency Departments this is predominantly the four hour wait target. This target was introduced following consultation to form the National Health Service (NHS) plan (Department of Health 2000, 2001). Despite wider, health outcome based indicators being introduced following

clinical pressure (Department of Health, 2011a), the four hour target remains key to Emergency Department performance at the case site. Although some success is recorded in meeting central performance target expectations, failure to meet the Enterprise Culture targets incurs punitive sanctions, and in order to publish acceptable performance figures, gaming, confounded data and a culture of suspicion and fear have developed (Turner et al. 2013b). Targets are centrally defined and administered through a command and control framework, backed-up with government agencies which regulate and assure performance (Turner et al., 2013a). Further criticisms of the use of summative targets within the Enterprise Culture emphasise their potential to draw focus away from local innovation and improvement.

Centralised performance targets were to be achieved through decentralised elements of the Enterprise Culture. Front-line managers in the NHS are employed to improve efficiency as they would in commercial organisations but are not empowered or in control of the performance outcome as commercial managers would be (Turner et al., 2013a, 2013b). The NHS uses complex systems which contain fragmented processes which run across rigid organisational structures which can comprise difficult social relationships (Turner et al., 2013b). Central government control and a lack of local ownership place managers in a position of potentially being victims of political blame for local performance issues (Baggott, 2007, 153). To support the management function, some of the power formerly taken by consultants was transferred to certain management levels as the Enterprise culture developed. This shift of power engendered clinical opposition and led to some difficult working relationships (Wall and Owen, 2003, 55-71; Hunter, 2003, 70).

The decentralised market system was also introduced and developed through the Enterprise Culture in order to exploit the efficiencies that should have been generated through performance indicators and managers. The market system is intended to achieve this exploitation through commissioning health care provision from providers whose competitive performance makes their service more attractive. This applies to providers who are both internal and external to the NHS. Internal markets aim to generate competition through rivalries between NHS providers and thereby inform and influence patient choice and commissioning decisions). External markets aim to

generate costs savings and efficiencies through commissioning possibilities with commercial health care providers.

The PPP framework, which underpins the reasoning behind the Enterprise Culture, differs from health policy in some significant ways. Centralised command and control practices, managers lacking competence in PPP techniques and rigid organisational structures are prevalent in the Enterprise Culture. In contrast, the private sector best practice delivers more localised, value-based solutions through the empowered managers and people within the PPP framework.

The PPP framework requires a clearly defined purpose which enables progress towards the organisation's priorities. Processes are the means by which performance towards the purpose is generated and should be designed without organisational or structural barriers. This study has shown that processes and the productivity rates required to meet performance and purpose measures can be analysed so that adequate levels of capacity can be provided to meet demand, but that relevant and detailed data is required to perform the analysis. This analysis should consider variation in demand patterns and match capacity to demand to avoid queues forming in the process. Performance indicators can be developed to allow immediate issue resolution when necessary. When these process elements are designed, competent people can enter the process in order to fulfil the purpose that the process is there to achieve. An empowered process owner resolves issues through coaching and mentoring people rather than motivation for performance being issued through a central command and control regime.

The literature describes that the primary purpose of the Enterprise Culture in Emergency Departments (although acknowledged as a target originally intended to promote hospital wide emergency care performance) is measured through the central four hour wait target. This does not correlate with the PPP use of indicators as a means of identifying opportunities for improvement through value-driven local outcomes.

8.3 Research Discussion

8.3.1 Introduction to the Discussion

The research examined the Enterprise Culture prevalent in the Emergency Department of a rural District General Hospital (DGH) and its ability to achieve the underlying policy aim to improve efficiency from two aspects. Firstly the Emergency Department's ability to meet the central, four hour wait target was studied and secondly the department's ability to resolve a locally defined issue through intervention was examined. These aspects are discussed within the context of the purpose of the Enterprise Culture and the PPP framework that policy aims to adopt in order to create efficiencies.

As discussed in chapter 2, studies in the literature similar to my own follow three themes.

1. The efficiency and quality aspects of health policy
2. The systemic nature of Emergency Care
3. Holistic studies which combine efficiency and complex systems

From these themes, gaps were identified where my research has the potential to add new knowledge.

My research had similarities with other studies in evaluating interventions to improve efficiency and quality aims arising from health policy, such as examinations of patient waiting time and the four hour target. Other similar studies have examined the application of PPP based improvements to increase efficiencies. However, whilst other research acknowledges targets as a policy driven aim, my study has examined the intervention and potential application of PPP techniques through a critique of the way that the hospital's emergency care system was shaped through the Enterprise Culture.

This study considered the Emergency Department's place within wider emergency care system, although at a much more detailed level than Brailsford et al. (2004). This allowed a qualitative assessment of the hospital entity within the system – and to some extent the nature of the market relationship with commissioners. Although this is an incomplete account of the dynamics of the system when compared to Braislford et al.'s

work (2004), it does provide a greater understanding of agency as a causal mechanism and recommendations about how that may be modelled in the whole system to add a full systemic assessment that expands on Brailsford's work.

Importantly, in my study of the application of the Enterprise Culture in a rural DGH, a gap in the literature, an evaluation is made of the effects of how far health policy goes in realising the real benefits of the PPP framework. The effects of agency from the people in the system is a key difference from the focus that other studies have on the best processes to create improvements within Emergency Departments.

8.3.2 Centralised Target

8.3.2.1 Purpose Considerations

The PPP framework emphasises the importance of a clear purpose and the Enterprise Culture specifies this for hospital emergency care principally through the four hour wait target. However this target contains limitations that do not meet private sector best practice.

Two key limitations are evident from this research. Firstly, that the target is centrally defined and does not address local needs such as patient case mix, the geographic or other location factors or other demand or systemic factors within the hospital emergency care system. A key function of targets and indicators identified from the literature is to address the needs of local service users (Turner et al. 2013a). However, the command and control influence of the centralised, summative target has led to the operational consequences discussed below.

Secondly, the target is not a representative measure of the policy expectation to generate efficiency and quality, nor is it able to address its specific purpose: to facilitate improvement to the efficacy of emergency care provision within the hospital. The imbalance of hospital capacity provided to meet demand within the Emergency Department does not allow consistent performance or target achievement. Some of the capacity restrictions are seen to be caused by the isolated nature of the Emergency Department, attributable to organisational barriers which prevent systemic efficiency at a hospital level.

Importantly, another aspect to systemic efficiency improvement is missing in the target. No consideration was observed in this study for the hospital's function within the local emergency care system (other than from pressure from the commissioner representatives) neither was any focus given to how systemic factors from other organisations within the system would affect performance. The target does not consider the hospital's role within the local emergency care system or how wider relationships and capacity and demand factors affect holistic emergency care provision. This tension is discussed in greater depth in the recommendations section.

8.3.2.2 Process Considerations

The effects of the Enterprise Culture four hour wait target extend into the operational activities of the case site. The importance of a well-planned process to meet the defined purpose is frequently documented in this thesis. Key elements include analysis of capacity and demand profiles which are required to calculate productivity rates using techniques such as Little's Law and takt-time rates to avoid phenomena such as the spike in discharges at 240 minutes and, as discussed in chapter 6, the need to care for patients in wards not suited to their clinical needs. Although data are available to calculate this at a departmental level, a more detailed view of patient cohorts is necessary to plan productivity to consistently meet the target.

Despite the argued need for a clearly defined process and competent people to enact it, the research found that the process for moving patients through the hospital's emergency care system was not sufficiently well defined. No monitoring activities were in place to measure performance and address issues as they happened. Instead of a mechanism to immediately resolve performance issues, the Emergency Department relied on audits that were not contemporaneous (and which were performed by staff outside the emergency care system) which added delay to improvement opportunities and patient care.

The PPP framework places great importance on processes, however the case site did not use robust processes to achieve its care purposes. The Enterprise Culture present in the case site did not lead to the adoption of practices that health policy is created to achieve. This lack of planning would be under the accountability of managers – both in the Enterprise Culture and the PPP framework. However in the Enterprise Culture,

managers were not supported to produce this level of planning. The fearful and reactionary nature of managers' actions and the pressure placed on managers through the command and control nature of the Enterprise Culture (discussed in the next section) prevented this. However, it is uncertain that managers would have been given the opportunity to develop competence in, or knowledge of PPP planning. No evidence of developing managers in PPP techniques was found in the review of the policy documents, observations from the research or the interview process.

8.3.2.3 People considerations

A key role of a manager in the Enterprise Culture is to enable efficiency improvements, although as discussed this appears to be an impractical expectation considering the research findings. Similarly, the PPP framework relies on managers to facilitate improvement although it realises this through coaching and mentoring methods which empower a competent workforce. The Enterprise Culture reality of managers reacting to performance issues to achieve a centralised target represents a key gap from PPP and the adverse consequences of the command and control system seen in the literature.

The role of a manager within the Enterprise Culture has been shown by this research to have an unclear function. Pressure from political entities (commissioners and central government for example) creates a need to intervene with operational activities in order to achieve a target largely out of their control. Pressure from clinicians and inter-departmental barriers has also been seen to exacerbate this problem and, as noted in the literature, managers remain unpopular with the public (Learmonth, 1997, 216-220). Given the consequences of this pressure and the failure to prepare managers to lead towards PPP framework improvements, as noted above, poor performance decisions and outcomes are unsurprising. This also leads to a question about the real function of Enterprise Culture managers: given the unrealistic expectations, managers absorb the consequences of performance, whether this is an inadvertent effect of policy or a political move by design is an area for further research. The effect of reactive decision making on health outcomes poses potential risks and presents another area for future research.

The premise of achieving excellence through a robust process is that only staff who are competent of enacting the process requirements can enter it. This research found that

this was not possible within the case site's Enterprise culture largely because of the lack of defined and documented process, but also because of the reliance on agency staff who did not have a tacit knowledge of the hospital. The Enterprise Culture was unable to provide a means to identify or resolve such serious issues as matching discharges to admission in a manner which would allow beds to be free for patients that required them. The hospital made similar discharges to admissions each day (otherwise the hospital would constantly expand), however the imbalance between admission and discharge times caused queueing and reactive decisions throughout the hospital's emergency care system.

The organisational structure of independent departments with their own performance expectations encouraged process fragmentation and the culture of tension observed. The relationships that were observed as a result of the barriers to harmonious relationships between departments (and agency staff unfamiliarity with working practices) did not correspond with the PPP framework of unimpeded, horizontal flow for the patient.

8.3.2.4 Conclusion of Centralised Target Discussion

Although the purpose defined through the Enterprise Culture is clear through the four hour wait target (and timely care was stated to be an important aspect of emergency care by some interviewees in the research) it is not representative of the emergency care system or locally generated to meet that system's needs. In fact, this isolated target seems to focus distinction within the system by defining Emergency Department patients seen as '**their** problem'.

The target could be attained if capacity and productivity were calculated using PPP techniques, but this would require a wider, systemic perspective and more complete, relevant data. Furthermore, a more structured process, trained and competent staff, and empowered managers would be necessary. As the process of providing emergency care crosses existing departmental barriers, two options are presented:

1. A local owner of the emergency care process is introduced whose authority crosses all boundaries and is an empowered decision maker, or

2. A new organisational entity is introduced that contains the whole emergency care system within the hospital.

The PPP framework achieves its success through a clearly defined purpose target. The four hour wait target for Emergency Care, although important, represents a patient's entitlement within the system. Non-achievement of this target is the effect of imbalances of capacity and demand in the system. To manage this entitlement and other unnecessary queues in the system (for example the Delayed Transfers of Care (DTOC) patients seen in the research), I argue that a systemic review should be undertaken. This review should address the key problems and questions which face those planning the emergency care system and a discussion of this review is given in the Recommendations section.

Given the Enterprise Culture's clear purpose, the PPP framework then requires a defined process. Toyota's maxim of average people managing brilliant processes demands that the process is more influential than the people. That does not mean the people should be automatons, but simply that the coaching and other structures are there to empower them when needed. The research clearly shows that in the case site the people are more influential than the process. For the health policy responsible for the Enterprise Culture to truly achieve its central target, a further recommendation for improvement would be to follow the PPP framework and define the process, then ensure that staff are competent to enact them and managers are competent to support the staff to resolve problems and make improvement. At the case site level, given the organisational barriers and reliance on agency staff training staff to be competent in the process, this would be a difficult task: although the intervention showed that it is possible.

8.3.3 Locally Defined Issue

8.3.3.1 Process Considerations

The concerns associated with using a central target and insufficiently defined process were partly addressed when staff designed and implemented a process to address a local health care need. Innovation was achieved and the process extended between two organisational departments which addressed a wider aspect of the hospital's emergency care system.

However further evidence of the failure to prepare staff to understand or implement PPP methods through the Enterprise Culture was seen. The process was given an associated measure and target but no monitoring was available to generate improvement. The same reliance on the audit culture to inform quality improvement was implemented. The targeted performance was not met and despite the process and target being locally developed, evidence was found in the interviews that some staff did not believe the process should be applied in all cases.

The influence of the central target four hour wait target remained evident. The pressure to achieve the central target was clearly greater than the need to follow the process in some observations.

8.3.3.2 People Considerations

Although the process was developed by staff within the system and addressed local needs, barriers between departments remained. Following the intervention there was still evidence of relationship issues and the concern that an Emergency Department patient was an Emergency Department problem. This could be because the barriers remain deeply rooted problems and significantly because of the reliance on agency staff. However relationship issues between clinical staff could also be attributed to the minimal instruction (staff briefing, an explanatory email and an amendment to the departmental handbook) given to the people who enacted the process. All of these reasons represent a departure from the PPP framework expectation that only competent people enter the process.

Consultants leading an intervention did however, lead to a quick design and implementation. Clinical staff involvement in leading the intervention was a key observation from the interviews and, despite the limitations of measurement of performance and relationships discussed above, this approach did lead to inter-departmental agreement for patient care. Management involvement was restricted to supporting the ratification of the change at governance committees which shows a more proactive role for clinicians. In this study consultant's power, although challenged in the literature, did not appear diminished at the expense of managers' authority.

However, the choice of intervention may have reflected structural barriers resulting from individual nature of consultants' work or other organisational barriers. The intervention did not look to address the central target which clearly remained a highly influential factor on the Emergency Department, and hospital emergency care system operational activities. It did however address a local need which is aligned to PPP framework expectations. An area for further research could be an examination of the influence and limitations consultants have on change activities.

8.3.3.3 Conclusion of Local Issues Discussion

An examination of the intervention undertaken within the Enterprise Culture confirms the conclusion from the discussion of the central target. The central target remained a highly influential aspect of the Enterprise Culture activities within the case site. People had more influence in performance outcome than the process did, whether driven by pressure from the four hour target or not being fully competent in enacting the process.

8.3.4 Conclusions to the Discussion

The purpose of this chapter is to address the final research question: How can the private enterprise best practice framework or other best practice methods be introduced to meet the needs of the local emergency care system? Several themes emerge from the discussions which conclude that neither the four hour wait target, nor the local needs were met through the Enterprise Culture in place at the case study site. However, clear recommendations can be drawn to use the PPP framework to support local needs.

Firstly, the central target does not necessarily represent the needs or local issues of the emergency care system examined, but does have a great influence on operational activities. As discussed above, timely care is an important entitlement of emergency care but one which can be facilitated through balancing capacity with demand. Although this target may well remain a policy directive and local commissioning target, better understanding of the target's influence within the local emergency care system – in particular to commissioners – could generate a review of wider systemic needs and how to measure them.

Secondly, a review of the demand for local emergency care, both within the hospital and within the context of the whole system's care providers, is necessary in order to understand the capacity needed to meet it. In section 8.4, I will develop the recommendations and suggest a method to undertake this review as an opportunity for further research.

Thirdly, the adherence to the process would require greater attention by those enacting it. This study has demonstrated that the people component of the system studied has a demonstrably greater influence than the process component. A robust process can be amended through continuous monitoring and adjustment through well trained managers and competent staff. A further requirement of the process would be the removal of organisational barriers.

Finally, a review of the culture is necessary to provide competent people to enter the process and empowered and skilled managers to generate efficiency improvements. Existing, deeply rooted organisational barriers and practical problems of providing sufficient levels of permanent staff are difficult areas to address. These could be taken as individual topics for further research.

The Enterprise Culture has not replicated the framework that underpinned private sector success. However, many opportunities exist in emergency care to adopt the private sector's best practices to improve service delivery.

8.4 Developing the Recommendations

8.4.1 Introduction

As noted above, a major concern from the findings of the research was the inability of the policy present under the Enterprise Culture to match capacity and productivity rates to the demands of patients attending the Emergency Department in order to meet a defined purpose. This concern was identified within the process of Emergency Department and the hospital within their function of the emergency care system. However a wider system issue remains, both within the hospital and the emergency care system of which it is a part.

Complexity theory considers “emergence”, where “interactions among components both with each other and with the whole of which they are part are constitutive properties of systems” (Byrne and Callaghan, 2014, 22). Within an emergency care system defining these component parts, possibly an Emergency Department, hospital, care home, (or at a lower level clinical tasks and spaces) and their interactions is necessary as a “metaphor” to develop an account of causal powers structures within the system (Byrne and Callaghan, 2014, 39-56).

8.4.2 Methodology

In chapter 5, I argued that complexity theory addressed the complex interactions found within the structures of Enterprise Culture. The deductive theory selected for this research used dominant quantitative, less dominant qualitative elements. The dominant quantitative element aimed to examine the organisational and procedural nature of the PPP framework which the Enterprise culture seeks to adopt, and the qualitative techniques to develop a framework to explore the expected causal relationships.

The findings of the research, however, reveal that the Enterprise Culture present in the case site is often more influenced by behavioural complexities: people are more influential than processes. The workforce relationships observed were not the same as those seen in private sector best practice.

Although the Enterprise Culture looks to adopt the PPP framework, including the importance of following process, its efficacy is compromised because of the causal influence arising from relationships and social complexities. This raises an ontological concern about the social reality studying the Enterprise Culture and the role of process and organisational laws in understanding complex social world issues. Byrne and Callaghan argue that within their ontology “emergence underpins the whole social world” and that in “epistemological terms there is no transcendental reality to be described only in terms of mathematical formalisms” (2014, 209). Although I agree with this statement, I remain committed to the potential for improvement that strong mathematical formalism such as Little’s Law and takt time can provide within an individual system component. These formalisms have shown empirically the potential for optimisation and effectiveness such as Ng et al.’s work which led to improvements

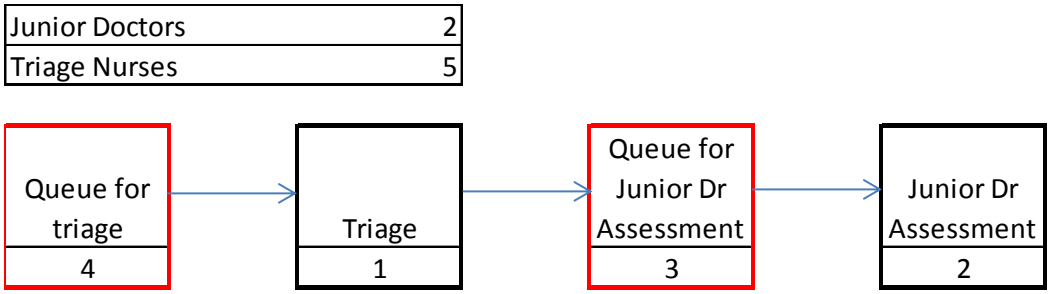
to patient flow within an Emergency Department: reducing waiting times and improving patient satisfaction (2010).

In complexity theory, computer simulation models are used to provide a metaphor of the system (Byrne and Callaghan, 2014, 41-56). Computer simulation metaphors are used dynamically (to show changes through time and interaction of components) which can demonstrate change (Byrne and Callaghan, 2014, 162) and test scenarios (Maidstone, 2012). This allows decision makers using the simulations to "reach correct conclusions about the net impacts of interventions in systems with many interacting actors, multiple goals, and conflicting interests" (Milstein et al., 2010, 811). Brailsford and Hilton note the benefits of simulation in health care decision making analysis praising its "flexibility, ability to deal with variability and uncertainty" and its understandable usability with health care professionals (2001, 1).

8.4.3 Simulation in Emergency Care

Two simulation methods are discussed and compared by Brailsford and Hilton in their 2001 paper considering the most appropriate simulation method with which to form health care models; Discrete Events and System Dynamics. Discrete Events simulations model systems in the form of networks comprising queues and activities (Brailsford and Hilton, 2001, 1; Maidstone, 2012). System components are modelled as discrete units of activity (patient triage for example) and entities (patients for example) progress through the system as a "series of discrete events" (Maidstone, 2012, 1). An entity's progress is based on the characteristics of the activity durations at discrete points in time before the move to the next queue. For example, an aspect of the Emergency Department could be viewed in figure 8.1.

Figure 8.1: An example extract of an Emergency Department Discrete Events model.



The number of patients within each activity or queue is shown below each box. Patients progress through the system based on the characteristics, for example severity of illness or age and a logical sequence of activities. If, for example, a patient requires a doctor assessment but both doctors are occupied, the patient must queue until a doctor becomes available. The time that a doctor would need to assess a patient is based on samples for "probability distributions" of the patient's characteristics (Brailsford and Hilton, 2001, 1).

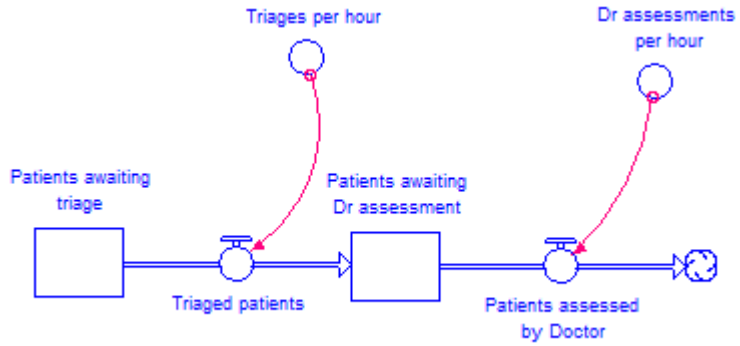
System Dynamics simulations model networks continuously through a series of stocks, flows and delays (Brailsford and Hilton, 2001, 1, Maidstone, 2012). The stocks represent a quantitative build-up of units and the flows represent a means of the unit moving into or out of a stock based on a rate of flow from the delay. Maidstone asserts a key difference between System and Dynamic Discrete Event simulations: System Dynamics "focuses more on flows around networks than on the [Discrete Events focus of the] individual behaviour of entities" (2012, 2). System Dynamics simulations can be also used qualitatively and tend to be used at a strategic level whereas Discrete Events are more often used to address operational level issues, for example to "solve resource allocation problems" (Brailsford and Hilton, 2001, 2). The qualitative aspect of System Dynamic simulations addresses identifying and representing the elements of the system which could "generate an influence in the problem situation" (Brailsford and Hilton, 2001, 2) such as delays from specialty referrals to a patient waiting for admission in an Emergency Department.

This combination of quantitative and qualitative aspects allows the modeller to represent and understand an identified problem by comprehending the problem's

structure and the "relationship present between relevant variables" (Brailsford and Hilton, 2001, 2).

An example System Dynamic representation of the Emergency Department extract is shown in figure 8.2.

Figure 8.2: An example extract of an Emergency Department System Dynamic model.



In figure 8.2, patients' progress through the system based on the rate defined in the delay – in this simplistic model these are the 'Triages per hour' and 'Dr assessments per hour' which will pull patients out of the 'Patients awaiting triage' and 'Patients awaiting Dr assessment' stocks. Although characteristics are not defined to individuals as in a Discrete Events simulation, the patients can be grouped to show how they progress. Patients entering the system can be categorised, for example, as ill or severely ill if the rate of assessment is likely to be fewer for the latter group.

Considering the most appropriate method to use when simulating health care systems, Brailsford and Hilton compare Discrete Events and System Dynamic methods (2001). They conclude that the answer may lie in the purpose of the model and give guidelines for value judgement when selecting the method. Discrete Events are appropriate for operational and tactical decision making for optimisation or prediction for a small number of individuals who need to be tracked over a short period of time (Brailsford and Hilton, 2001, 13). System Dynamics are recommended for strategic and policy making decisions to gain an understanding of larger groups over longer periods of time (Brailsford and Hilton, 2001, 13).

However in his 2012 paper, Maidstone adds a third, more recent, method to Brailsford and Hilton's comparison. Agent Based simulation is "a relatively new method"

comprising autonomous agents which "follow a series of predefined rules to achieve their objectives whilst interacting with each other and their environment" (2012, 3). The agents within the system "encapsulate the behaviours of the various individuals that make up the system" in order to understand how behavioural change affects the system performance (Parunak et al., 1998, 1). Byrne and Callaghan assert the usefulness of Agent Based simulation in understanding social complexity. Agent based simulations can provide a means to understand "what will happen if the rules describing agent behaviour are correct representations of the causal power of interactions among agents" (Byrne and Callaghan, 2014, 172). Agent Based simulation "is a very extreme example of a bottom up approach" to understanding complexity (Maidstone, 2012, 5)

Although Discrete Events is the most widely used simulation method (Brailsford and Hilton, 2001, 1; Maidstone 2012, 1), System Dynamic simulation offers a simulation platform to focus on wider systems at a strategic level which consider the qualitative aspects of the system's characteristics. Maidstone argues that Macal's (2010) Agency Theorem for System Dynamics (that all System Dynamic simulations have an equivalent Agent Based simulation) leads to the potential for Agent Based simulations to meet or even outperform System Dynamics (2012, 5). However, as Agent Based simulations are more time consuming to produce and operate (Maidstone, 2012, 5), System Dynamic simulations may be more practicable.

However, both Maidstone (2012) and Brailsford and Hilton's (2001) papers lead to the conclusion that the problem should determine the simulation method selected. The two papers also agree about the potential problems that System Dynamics and Discrete Events simulation methods generally best address. Parunak et al., assert that Agent Based simulations are "most appropriate for domains characterized [sic] by a high degree of localization [sic] and distribution and dominated by discrete decisions" (1998, 15).

Research of simulations methods in emergency care has produced positive results. For example, Brailsford et al., took a strategic approach using System Dynamic methods to model and simulate a whole emergency care system in order to address the issue of high emergency care demand in Nottingham (2004). Connelly and Bair use Discrete Events simulation to compare two triage methods (2004) and Wang provides an Agent Based

simulation to investigate Emergency Department performance under various settings (2009).

However a full and up to date study of the most appropriate method to study rural English emergency care system represents a gap in the literature. A full comparison of all methods or combination of methods to address both lower level relationship and social complexities whilst balancing strategic level demand and care provision is also a gap. Further research should look to investigate this by defining a whole emergency care system, formulating the questions and problems to be addressed, selecting the most appropriate simulation method(s) and creating a model and simulation environment for decision makers to address the questions.

From this research potential starting question is:

- What care provision is necessary to meet the emergency care system's demand and what alternative functions could be made to care for patients in a more appropriate place with minimal waiting?

Additionally, with the current focus on integrated care to manage co-morbidities in the aging population (Department of Health, 2013), and the need for health care functions and staff to provide alternatives to traditional care methods, an additional question could be:

- What aspect of the demand requires integrated care and what workforce is necessary to provide this care?

9 Conclusions

9.1 Contributions to the Researcher

As stated in chapter 1, my initial aim from this research was to use the academic process to test whether the methods that I had successfully used in the private sector could achieve the same results in a rural NHS hospital. As an engineer specifically recruited to the NHS management for my experience in designing and implementing efficiency and improvement projects, I was keen to make a positive impact on health care provision. Additionally, I saw this as an opportunity to add best practice to the growing body of evidence through an academic study. As an aspiring researcher, I was drawn to the robust academic process, and the need for evidence-based best practice for efficiency improvements was high within Emergency Care provision. Throughout the study, tensions and harmonies between the three personal aspects of engineer, NHS manager and researcher would frequently arise.

My work as an engineer had taught me to follow a robust research methodology that I could largely relate to in the academic research process. Clear research questions and aims, testable hypotheses and structured analysis, for example, were critical components of research in both sectors. However, some differences were also obvious. Engineering research is commercially driven and is performed at a much faster pace than I could progress my academic research: for example if I was researching an vibration issue for a oil platform in the Persian Gulf, I would have a limited time to work as millions of barrels of oil would be waiting to be pumped, but access to considerable resources to aid me. Although time pressured research might compromise quality, it was also a cause of great focus.

For many good reasons, study at PhD level would not allow rapid application of research. Developing my research skills in literature review and methodology and an introduction to philosophical principles such as ontology and epistemology was often troublesome for a quantitatively focused statistical engineer, but was a great experience of learning and has added greatly to my ability as a researcher. Other delays caused by the academic process were more frustrating and questionable in developing my ability as a researcher and producing timely and high quality outputs. Although I strongly support

the need for ethical integrity, for example, the time needed for university, NHS trust and national research approval added considerable time demands and some inconsistent results.

Timely research, however, has a very practical aspect in health care research above any concerns regarding my development as a researcher or the application of rapid engineering research. The critical point that I observed through my study is that changes in the NHS (and in particular changes to policy and the operation of my case site) move at much faster pace than my PhD study and this exacerbated some of the barriers to research discussed in the limitations section. The barriers to research in a rural DGH exposed me to a wider view of social science research and allowed a pragmatic application of methods and changes to protocol. This fitted very well into my experience of iterative design of experiments as an engineer but had the advantage of developing my qualitative and interpretative skill set. However research must be carefully planned to ensure that the outcome is meaningful and applicable to contemporary issues.

Timeliness of the research presented some other tensions on my dual role as NHS manager and researcher. Senior clinical staff considered outputs from the academic process as highly credible and were enthusiastic to engage in research and improvement on that basis. Conversely, some Directors within the NHS saw academic study as protracted and theoretical and were less tolerant of the time required for a PhD study as a means of achieving their improvement project as their need for delivery was immediate – a consistent reflection with the findings of Propper et al. (2008). A view that I often considered was that, because of the abundance of data in the NHS, managers wanted answers (evidence and analysis) first and questions to be formed later. The quality and relevance of the data were rarely questioned.

Although I remain sympathetic to managers' desire for timely, practical research (as I believe that service improvements should not be unnecessarily delayed), I feel that NHS management culture is often misguided. During the project an often quoted phrase from Directors and Managers within the NHS was "doing nothing is not an option". As an engineer, doing nothing is always an option and in the absence of good testing it is sometimes the only option that doesn't make things worse. A further reflection of this study on my role as a Manager is the rhetoric of policy that presented to NHS staff: that

the patient is at the heart of the service. This may be a true intention, however examination of the Enterprise Culture would suggest that organsations and certain people, but not patients, are at the heart of policy.

Some frustrations remain as a consequence of my study. As an engineer, assessment of outputs is a largely objective process. One might have to defend the use of mathematical approaches used in a solution or argue the interpretation of a statistic, but the formulae stand on their own merits. At times, I found the evaluation of process of this study subjective, inconsistent and in some ways abstract when focusing on an evaluating individual's own interests. For example, what as an engineer I might regard as a testable hypothesis derived from evidence and pertinent to the outcome could be evaluated as a self-fulfilling prophecy.

In summary, developing as an academic researcher has been very rewarding and has added an important dimension to my quantitative focused skill set. The academic research process required wider consideration of philosophy and methodology, and the direction and support I received was far more challenging and holistic than I had experienced in engineering. Being supported by other engineers had not led me to widely develop skills and techniques that could have been pertinent to problem solving. As a consequence, I consider myself a better researcher and would now undertake many engineering projects with the same approaches that I would employ in health and social care research. I will continue to develop the application of mixed methodologies as a critical way of evaluating and improving systems.

9.2 Contributions to the Community of Practice

Contributions to the community of practice draw together findings from the study in a logical pattern. Firstly, the application of thinking at a systemic level; secondly, improving efficiencies at a process level within that system; thirdly, the effective use of managers, targets (and people) within that process. Although my research identifies theoretical improvement opportunities, the practical differences between the Enterprise Culture and PPP are discussed in this section.

9.2.1 Systemic Thinking

My research discusses separate organisations found within the emergency care system, the departmental structures within those organisations, and the effects on patient care which arise from that fragmentation. This is consistent with the literature review and the need to think systemically that Brailsford et al argue for (2004). Considering the benefits of modelling, described in chapter 8, to better understand the system and plan for efficiency gains prompts an important question for application in the community of practice: how can organisations collaborate within a system to produce efficient emergency health care? However, my research also focuses on the tensions between organisations and other influencing entities (government bodies, regulators, etc.) and drives another important question: can the organisations within the system collaborate effectively in the health economy?

I intend to address both questions in the post-doctoral research outlined in chapter 8 and both elements are used to develop the initial research question:

> What care provision is necessary to meet the emergency care system's demand and what alternative functions could be made to care for patients in a more appropriate place with minimal waiting?

Although these questions require further research, practical implications for managers involve identifying and removing organisational barriers which impede the flow of patient care. This theory may not be practical however: an intervention in one Emergency Department was not sustained partly because of central targets and other elements of the prevailing Enterprise Culture. Therefore, expecting this to be implemented across a whole health economy may not be realistic and the further research will need to be designed to explore this. The question of rurality is also unresolved from the research but is of immense importance to the community of practice. The presence of the Enterprise Culture and the effects from central target is clearly seen in this research and the reviewed literature. The theory of targets informing patient choice in an urban environment with multiple acute, mental health, community and primary carers may be practical. However, in a remote and rural region where provider locations are spaced by up to 30 miles and public transport links are do not support such travel, the many patients do not get the choice that policy is designed to

achieve. Managers of health commissioners and providers would need to consider the system within the policy framework in order to provide high quality care. Although further research is required to understand the possibilities for collaborative working and the agency of the actors within the system, an opportunity for consideration of providing a collaborative environment is possible.

9.2.2 Process Implications

Managers might be able to address systemic and organisation issues to gain holistic improvements to patient care, however processes within the system can be partly improved immediately (although the boundaries and function of these process may change as a result of a system review and removal of organisational boundaries).

In chapters 5 and 6, I argued the need for analysis of the demand placed on the Emergency Department (or any provider in the system) and the capacity provided to meet it. These data can be used to calculate takt-time and other indicators useful within the process, however as noted in the next section, implementation of this may be an unmanageable theory that managers cannot practice.

The theories of capacity and demand analysis and calculation of takt-time were not directly testable in this study, but remain a key opportunity for managers in practice: along with subsequent defined processes and implementation of competent people. However, some of the limitations need to be addressed before this is possible: namely complete, relevant and accurate data and adaptable organisational structures. The likelihood of the full application and potential benefits in the contemporary NHS seem remote.

Further research is required to observe the effects of process improvement through capacity and demand analysis, however managers do have opportunity in the short-term to test takt-time based scenarios and develop good data gathering techniques.

9.2.3 Manager Implications

I have noted that managers have the potential for considerable responsibilities in my reflections. The expectations of managers through the Enterprise Culture may be misplaced, although there may be some ways that managers could use the findings of the research. However, the continuation of the challenge to the Enterprise Culture

remains: are managers empowered enough to use the findings and, if they are, are they competent to implement them?

I understand that this is a somewhat naïve assumption: that the Enterprise Culture is wholly responsible for the efficacy of managers. Medical consultant power and the strength of the Royal Colleges, for example are often not controllable through managerial decisions. However, these are not new arguments and the policies behind the Enterprise Culture have not addressed these influences but have still been developed to make efficiencies. Therefore my reflections are based on the strength of policy to achieve the improvements for which it was written.

Managers and senior clinicians have shown through this study an ability to intervene to address local improvement needs. However they were not able to meet the full potential of those needs or sustain and continuously respond to them. In order to effectively manage local processes, for example, managers would need to factor central targets, such as the four hour wait, into the takt-time formula. Although managers can use takt-time and other process indicators to monitor and control process performance, the influence of central targets is beyond their power. Even at a system level, Clinical Commissioning Groups are able to set local performance targets, however the central four hour remains how the Emergency Department and the trust are judged nationally.

As health policy continues to develop targets and entities designed to support health care provision, an ironic rhetoric is also delivered to achieve a focus on care services and not organisations (Department of Health, 2016). It is key for managers to focus on the quality and efficiency measurables for processes that they can control. Managers should also be aware of the processes defined above within the system. And finally they should be able to consider how central targets affect the process and the system.

When demand figures are available it is possible to plan the process, test it and make sure competent people enter it. When system knowledge is available a more integrated emergency care system can be planned.

9.3 Contributions to the Body of Knowledge

Through this research, an understanding of the efficacy of the aims of health policy on a rural DGH, as implemented through the Enterprise Culture, has been explored. The effects of how the Enterprise Culture has been developed and implemented in this environment were shown in the limitations of the hospital's emergency care system to achieve the policy goals:

- Firstly, to achieve the policy's four hour target for patients' time spent in the Emergency Department.
- Secondly, to make localised efficiency improvements in line with private sector best practice.

The Enterprise Culture has not prepared managers or clinicians to work in the PPP framework. Knowledge of improvement techniques and access to credible data were not observed. Furthermore, the pressure from the centralised four hour target distracted focused from the improvements implemented. Although managers could achieve the required level of competence through the Enterprise Culture if sufficient policy changes were made, whether they were fully effective in meeting the goals of policy noted above is still debated. Policy makers should also consider the target setting and organisational structures within emergency care systems to enable managers to be more effective.

The complex nature of health care systems is much wider, in terms of component organisations and causal mechanisms, than the policy behind the Enterprise Culture considers. Decisions regarding patient care, the use of emergency care capacity and operational activities within the system must understand and consider the whole system when planning and measuring effective emergency care.

This study has proposed potential methods which could be used to address and achieve the Enterprise Culture's four hour wait target using private sector methods. Although a patient waiting for over four hours was not considered satisfactory by interviewees in the research, private sector best practice would deem any unnecessary waits or queues to be undesirable in any system. An approach of understanding the relationships within

the wider emergency care system and balancing capacity and demand to remove such issues systemically is argued.

Although Byrne and Callaghan state that simulation is "not uniquely the best mode through which a complex world can be investigated" (2014, 153), it does offer an important component of effective decision making. At a strategic level simulation provides a method with which to consider capacity and demand dynamics with causal mechanisms for complexities arising from social and structural components.

9.4 Limitations of the Research

Some limitations to this study were caused by barriers to research arising from participant issues at the case site in a rural District General Hospital. Firstly, as discussed in chapter 4, the availability of participants eligible to enrol in the study was limited which caused me to reflect on the protocol originally selected for the study. The original protocol was developed from theory as the most appropriate way of conducting the study to answer the research questions. At the stage of enrolling participants to the protocol (which had been granted ethical approval) however, my reflections led to a pragmatic change in protocol to ensure that the most robust validation available was applied. Although this change to protocol limited the intended validation of the research, I considered that it still identified a significant representation of staff issues in a case site which was directly relevant to the application of the PPP framework and the prevalent Enterprise Culture at the case site.

When participants were recruited, a second structural barrier arose when some became unable to contribute to the research as discussed in chapter 7. Work pressure challenges and sickness absences prevented staff from attending planned protocol activities which added to the limitations of validating the research. However identifying these challenges and tensions generated further evidence to the issues related to the 'people' aspect of policy implementation in the case site. The effects of sickness and staff availability on the study led me to consider further the possibilities of validating my research findings. Balancing a pragmatic combination of validation techniques with a method that was far removed from theory was challenging. However, I chose to continue with a Delphi technique as the participants were on the border of the recommended lower limit (Bloor et al. (2015, 66).

A further significant limitation caused by barriers to research from participant issues arose when the Clinical Director, who had sponsored the study, announced his intention to leave the case site before the intervention had been confirmed (as discussed in chapter 7). This caused the original, theoretical protocol to be changed through an improvised method of devising, implementing and evaluating the intervention. Although these changes again limited the research from its theoretical intents, they did provide further evidence of the reliance on people and not process within the case site and identified a departure of Enterprise Culture from the PPP framework. Reflections from the Clinical Director were that the intervention must happen under his tenure because no substantive successor was available and there was a very high risk of the study not being able to continue after his departure.

The limitations to the research from staff participation issues, which moved the study away from the original theoretical protocol, add context to a causal mechanism of the Emergency Department's performance. Not only were staff unable to participate in the study as planned, the effect of permanent staff availability was also seen in the high use of agency staff unfamiliar with the hospital. The stress on permanent staff was a true limitation to research, but a key expression of the pressures on the case site.

More limitations to the study came from data gathering, analysis and interpretation. As a further consequence of pressures on the Clinical Director, the sample size for the review of patient notes compliant to the intervention was restricted to the time he was able to commit. As discussed in chapter 4, the size of the sample and my concerns over the long-term interpretation of the resulting analysis led to strengthening of the evaluation protocol. Using further ethnographic observation and semi-structured interviews proved a valuable deviation from the planned protocol. These methods, in particular the semi-structured interviews, allowed me more understanding of the agency of the emergency care system within the hospital and formed a major recommendation for future research and would form the original data gathering protocol should I conduct similar research again.

Limitations were also identified from data source issues. Poorly recorded patient attendance, and capacity resource data limited quantitative analysis and the possibility

of fully describing the Emergency Department characteristics, detailed in chapters 4, 5 and 6. Although access to quality data would have allowed me to test the PPP theory to the case site, through use of Little's Law and takt time, this represents another departure of the effects of the Enterprise Culture from the PPP framework. An understanding of these aspects would have led to improved analysis and would greatly aid Emergency care planning and decisions making. From this limitation and the emphasis on capacity and demand analysis identified from this research, I was able to introduce further improvements in my role as a manager in the trust.

Ethnographic observation was justified as an appropriate data collection method in a critical realist study in chapter 4. However, during the periods of observation I was often taken from the Emergency Department when following patient movements in order to examine events. Although following patients contributed greatly to explanatory data to understand causal mechanisms, I was taken away from the Emergency Department for long periods of my observation time. Despite being a limitation for all individual researchers, the limitation may have caused me to miss some important phenomena as I was often following patients during particularly busy periods in the Emergency Department.

Replication of this research across other rural DGH emergency care systems is not feasible given the specific nature of the relationships, processes and individuals making up the case site study. However, as noted in chapter 5, any researcher wishing to follow this study's theoretic proposition, has a generalisable template for comparison (Yin, 2014, 21).

9.5 Concluding Synopsis

Through this study, I aimed to test the theory that the Enterprise Culture has provided a framework for performance improvement in a rural District General Hospital. A single site case study was selected to apply mixed methods in order to understand the rigid organisational structures and complex social and relational phenomena described in the literature review. The study found that the PPP framework, which the Enterprise Culture was developed to replicate, is not present in the case site in several key areas. In particular, managers' understanding of the framework and the complexity of the systemic nature of providing emergency care was insufficient. Additionally, the

influence of individual decision makers over a robust process can be seen to draw performance outcomes away from expected targets.

9.6 Final Recommendations

In addition to the recommendations to develop a simulation model to understand the emergency health system, additional, tangible recommendations can be drawn from the study.

1. Changes to data collection methods in the Emergency Department are necessary to allow both deeper analysis of patient demand characteristics and the capacity planned and actually delivered to meet them. Little's Law and takt-time can then be calculated to plan activities to avoid queuing.

2. Managers should be trained in PPP techniques and enabled to apply them to develop or improve both robust processes and empowered people to meet the defined purpose (four hour wait, or local need).

3. Indicators should be developed and used to assure compliance to expected outcomes from the process. A culture shift away from the decisions of influential people towards excellence through processes should be encouraged.

4. Staff should be made aware of the holistic and systemic nature of emergency care, not just their departmental responsibilities. They should also have an understanding of reactions to and consequences resulting from their actions in a complex system.

5. Wherever possible, departmental or administrative barriers should be removed to allow a process manager to assure a patient's unrestricted flow through the emergency care system.

Appendix 1: Database Searches for the Development of Health Care Indicators

1. Academic and Business Source Complete

1. DE "ECONOMICS -- Sociological aspects"
2. DE "PERFORMANCE evaluation"
3. DE "KEY performance indicators"
4. DE "POLITICAL accountability"
5. DE "QUALITY of service"
6. indicator*
7. OR/1-6
8. DE "HEALTH care reform"
9. DE "HEALTH care industry"
10. DE "HEALTH services administration"
11. DE "HEALTH services administrators"
12. OR/8-11
13. 7 AND 12
14. LIMIT to January 1980 to none; Scholarly (peer reviewed) journals; English language

This search returned 161 results on 9th March 2011, 17 met the search criteria.

2. COPAC

Subject: "National Health Service"

Keyword "indicator"

The search is limited to the date range 2000-2011 in English. 132 results were returned on 16th March 2011, 25 met the search criteria.

3. Health Business Elite

1. Indicator*
2. "Health care"
3. "Healthcare"
4. 2 OR 3
5. 1 AND 4
6. LIMIT to January 1980 to 2011

Thesaurus mapping is not available for this database. The search returned 202 results on 11th March 2011, 26 met the search criteria.

4. Health Management Information Consortium

1. Indicator*
2. HEALTH SERVICE INDICATORS/
3. HIGH LEVEL PERFORMANCE INDICATORS/
4. INDICATORS/
5. KEY INDICATORS/
6. NHS PERFORMANCE INDICATORS/

7. PERFORMANCE INDICATORS/
8. SOCIAL INDICATORS/
9. OR/1-8
10. HEALTH CARE/
11. CENTRAL GOVERNMENT HEALTH ORGANISATIONS/
12. BUSINESS HEALTH ORGANISATIONS/
13. COMMUNITY HEALTH CARE/
14. COMMUNITY HEALTH SERVICES/
15. HEALTH AND SOCIAL CARE/
16. HEALTH AUTHORITIES/
17. HEALTH ECONOMICS/
18. HEALTH IMPROVEMENT MODERNISATION PLANS/
19. HEALTH IMPROVEMENT PROGRAMMES/
20. HEALTH POLICY/
21. HEALTH SERVICE ADMINISTRATION/
22. HEALTH STATUS/
23. OR/10-22
24. 9 AND 23
25. LIMIT to January 1980 to 2011

The search returned 99 results on 11th March 2011, 31 results met the search criteria.

5. NHS Evidence Based Reviews

"Health Care" and Indicator

The search is not date limited. 52 results were returned on 22nd March 2011, non met the criteria.

6. Web of Science

1. Indicator*
2. "Health care"
3. "Healthcare"
4. 2 OR 3
5. 1 AND 4
6. LIMIT to January 1980 to 2011

Thesaurus mapping is not available for this database. The search returned 358 results on 3rd May 2011, 14 met the search criteria.

Appendix 2: Database Searches for Emergency Department Indicators

1. Academic and Business Source Complete Databases

1. DE "KEY performance indicators"
2. indicator*
3. 1 OR 2
4. “accident and emergency”
5. “emergency department”
6. “emergency departments”
7. OR/4-6
8. 3 AND 7
9. LIMIT to January 1980 to none; Scholarly (peer reviewed) journals; English language

This search returned 9 results on 16th June 2011. One result met the search criteria following abstract review.

2. COPAC

“Emergency” AND “Indicator”

The search is limited to the date range 2000-2011 in English. 104 results were returned on 10th March 2011. Two results met the search criteria.

3. CINAHL

1. MM “Clinical Indicators”
2. Indicator*
3. MM "Emergency Care"
4. MM "Emergency Medical Services"
5. MM "Emergency Medicine"
6. MM "Emergency Nurse Practitioners"
7. MM "Emergency Nursing"
8. MM "Emergency Patients"
9. MM "Emergency Service"
10. MM "Emergency Treatment (Non-Cinahl)"
11. MM "Physicians, Emergency"
12. “emergency department”
13. “emergency departments”
14. “accident and emergency”
15. 1 OR 2
16. OR/3-14
17. 15 AND 16
18. LIMIT to 2000 to 2011, Abstract Available, English Language, Major Thesaurus Headings

This search returned 358 results on 11th March 2011. Twenty three met the search criteria following abstract review.

6. Health Business Elite

1. Indicator*
2. “emergency department”
3. “emergency departments”
4. “accident and emergency”
5. OR/2-4
6. 1 AND 5
7. LIMIT to January 2000 to 2011

Thesaurus mapping is not available for this database. The search returned 67 results on 11th March 2011.

7. Health Management Information Consortium

1. CLINICAL INDICATORS/
2. ECONOMIC INDICATORS/
3. FUNCTIONAL STATUS INDICATORS/
4. HEALTH INDICATORS/
5. HEALTH SERVICE INDICATORS/
6. HIGH LEVEL PERFORMANCE INDICATORS/
7. INDICATORS/ OR KEY INDICATORS/
8. NHS PERFORMANCE INDICATORS/
9. PERFORMANCE INDICATORS/
10. Indicators*
11. OR/1-10
12. EMERGENCY SERVICES/
13. EMERGENCY ORGANISATIONS/
14. EMERGENCY ADMISSION OF PATIENTS/
15. EMERGENCY BED SERVICE/
16. “emergency department”
17. “emergency departments”
18. “accident and emergency”
19. OR/12-18
20. 11 AND 19
21. LIMIT to January 2000 to 2011

The search returned 44 results on 11th March 2011.

8. PubMed

1. "Quality Indicators, Health Care"[Majr]
2. "Health Status Indicators"[Majr]
3. 1 OR 2
4. "Emergency Service, Hospital"[Mesh]
5. "Emergency Medical Services"[Mesh]
6. "Evidence-Based Emergency Medicine"[Mesh]
7. "Emergency Treatment"[Mesh]
8. "Emergency Nursing"[Mesh]
9. "Emergency Medicine"[Mesh]
10. OR/ 4-9

11. 3 AND 10

The search returned 381 results on 11th March 2011.

9. Web of Science

7. Indicator*
8. “Health care”
9. “Healthcare”
10. 2 OR 3
11. 1 AND 4
12. LIMIT to January 1980 to 2011

Thesaurus mapping is not available for this database. The search returned 358 results on 3rd May 2011, 14 met the search criteria.

Appendix 3: University of Lincoln Ethical Approval

School of Health and Social Care Ethics Committee
Faculty of Health, Life and Social Sciences
Bridge House
Brayford Pool
Lincoln
LN6 7TS
18th January 2011

'How have 'needs-led indicators been developed, what are they, to what extent are they implemented and do they lead to improvements in service delivery and quality of care in Emergency Departments in District General Hospitals'

Dear Paul

On behalf of the Committee, I am please to confirm a favourable ethical opinion of the above research, on the basis described in the application form, protocol and supporting documentation.

With the Committee's best wishes for the success of this project.

Yours sincerely

Professor Laura Serrant-Green, Chair

1

Appendix 4: Guideline Instructions for the Intervention

Admitting patients to CDU for observation

All patients admitted for observation should have a plan agreed with a senior A&E doctor and the A&E nurse co-ordinator. All patients admitted for observation should have a drug chart completed to ensure they get pain relief and any essential medications. All medical staff now have access to SystmOne, the computer system that most of the local GPs use, to minimise medication errors. The drug chart should also include regular medications, particularly for patient with Parkinson 's disease. The patient's consent should be sought before using SystemOne. The original blue A&E notes should not go around to CDU with the patient, as they are likely to get lost. Most observation patients should be admitted to CDU for less than 12 hours, and after 24 hours they should be all be referred to the appropriate inpatient teams. The nursing staff on CDU will provide the nursing care for these patients. The observation patients should have consultant ward rounds twice a day during the week and at least once a day at weekends.

Patients should not be discharged from A&E or CDU until it is safe for them to go home. This is important for elderly patients with precarious social circumstances should not be discharged overnight. In principle, "hospital at home" services might present a safe alternative to admission but these are not available overnight at the present time. There should be written communication from A&E team to the community teams, and the care home if that is where they are going, including the reason for admission, what was done, onward plan, medications with doses and times due, and whether follow up appointment need to be organised. There must be mechanisms in place to ensure that patients who are being discharged can have prescriptions dispensed prior to discharge. The options for this include sending a drug chart to pharmacy for patients who have been admitted, sending a white prescription to pharmacy for patients who have not been admitted, dispensing the medication from the A&E supply, and giving the patient or carers an outside prescription. If the patient requires dressing changes they should be given at least 7 day's supply on discharge. Patient being transferred to the community hospitals need a green & white community drug chart completing. If the patient is issued with a frame/ crutches/walking stick etc. then this must go with patient. We should ensure cannulas are removed and patients clothes put on as increasing number of patients have been discharged with gowns on. If a terminally ill patient is on a Liverpool Care Pathway then the "Do Not Attempt Resuscitation" form and the pathway must be completed accurately and must go with patient. Finally, all patients who are in pain should be offered appropriate analgesia prior to transfer.

Appendix 5: Example Coded Interview Transcript

Organisational relationships

Intervention success

Staff availability

Influence of four hour target

PT: Please could you give your views on recent changes to the observation patient pathway?

AS: The pathway was changed to ensure that patients moving between A&E and CDU were given the same ... what shall I say… well previously it was thought that these patients weren't given the same credence within CDU and they were add-ons as opposed to being part of the multi-disciplinary team. The changes to the pathway have ensured that these patients are dealt with appropriately. They're not hanging around, they are not waiting for consultant review because all of these stipulations are in place. So it's improved patient care.

PT: Do you think it has been effective?

AS: I think so. My observation is that there aren't as many patients waiting to be seen as I walk past which is good for patient care.

PT: So you feel there is a demonstrable improvement. Do you feel that ties back to the needs of the department and the needs of the patient?

AS: I think it ties back to the needs of the patient. It will put pressure on the department because the department lacks consultant presence and of course it needs to be a senior decision maker albeit a consultant or somebody on the CCG register who can make decisions to discharge. So getting that level of body around CDU will prove difficult but in terms of patient care it's the right thing to do.

PT: And its very much driven by the needs of the ..

AS: patients..

PT: department and patients who turn up at the department and the way the hospital works rather than….

AS: the people who run these departments

PT: Which barriers prevent compliance (implementing and sustaining) of this pathway?

AS: Lack of consultant presence and that's because of difficulties in recruitment. Departmental… needs isn't the right word, but in my view CDU believed that these patients were thrust upon them rather than embracing them into that ambulatory type care. But now of course that's all changed now because we're moving more towards ambulatory type pathways so that's helped the department move on rather than just say these are more A&E patients to look after.

PT: So the barriers to compliance as to whether the clinical staff follow the pathway, or are able to follow the pathway – from a management perspective do you see any…

AS: Well, there's an accountability. You know if, in retrospect a patient has waited or their care has failed, there's an auditable trail of what's happened. So the barrier is that we have to break down that issue between A&E and CDU don't we? So we have to… this is ensuring the

compliance to the correct patient pathway. But as I say, that will be moved on much more quickly because of the ambulatory care pathway they are about to implement.

PT: **How does this compare to other pathway changes?**

AS: Well I think in the study that was done, everybody had a chance to have their say. In the past people believe, as I have eluded to, patients being thrust upon CDU for them to look after. And they believe that was without their input. Whereas the study clearly let everyone have their say and give the why this is the right thing for the patient.

And care has moved on. The national guidance is that we move towards ambulatory care model and this just helping them get into that ward mindset, into that quick turnaround, fast turnaround, diagnostic type [last word not understandable].

PT: Why do you think there is a need to get so much input and persuade people so much when it comes to change? What's the difference between that and a direct command?

AS: In top down command you'll always get non-compliers.

PT: I'm just trying to tease out why you feel that's so prevalent?

AS: Everybody's had their chance. If you listen hard to what people are saying and doing what they're saying is that this is being done to us. The Trust board is at XXXX. The fact that it sits outside the hospital means nothing to the Pilgrim staff so they believe that XXXX are disempowering them and making them do this. The way we went about getting this policy in place was by involving all the key stakeholders, which I think was the right thing to do. It was time consuming, and if you think about why we did it – we really need that policy now – one of things we could improve on was to shorten the time it took for people to give back their answers.

PT: I think you have already answered this question as the opposite of the barriers, but **What enabled positive compliance to the pathway?**

AS: Getting people involved. Getting people to talk to each other. So actually, eventually, despite them being two discrete departments, and they believe they are, it's that joining together of teams to ensure the patient pathway is seamless.

PT: **How does this compare to other pathway changes?**

AS: Like? What are you thinking?

PT: Well, obviously these were changes that were identified by clinicians from various studies that we did. The solutions were generated by clinicians and backed by managers. But in all honesty there wasn't a great deal of management involvement.

AS: There didn't need to be until the end result into the physical getting the policy through the recognised bodies or whatever.

PT: And was that lack of interference an enabler do you think?

AS: Yes. I still believe that people need to be steered in the right direction though. So if the agreement had been we are not taking A&E patients, what would we [managers] have done? We would have steered them.

PT: **What are your views on indicators and targets when complying with the pathway changes?**

AS: Well I think in the way that the NHS is structured, if there was nothing to aim for what do I think would happen to patient care. There should be something, a target to achieve otherwise we'll just go back to 12 hour waits.

PT: And should the targets be local? Should they be government driven? Should they be a combination?

AS: Well to get consistency of care I think they should be government driven as far as everybody… so it doesn't matter where you go, we guarantee you will be seen in the same time. But there will be some local requirements, some local need that the CCG will impact so a combination of both.

Appendix 6: Wording from the Participant Information Sheet

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team will go through the information sheet with you and answer any questions you have.

From an on-line Delphi group, we aim to identify:

1. Which controls and practices are, or have been, in place to ensure that time-led (four-hour patient discharge or admission) targets are met.
2. What needs-led indicators you believe are necessary to ensure effective needs-led emergency care in your department?

What is the purpose of the study?
We would like to establish what systems of work will deliver the best emergency care for local needs within your department – independent of national targets. This study is funded by the researcher and is undertaken through the University of Lincoln.

Why have I been invited?
You have been invited because of your position and knowledge of the hospital's emergency care system.
It is up to you to decide to join the study. We will describe the study and go through this information sheet.

Do I have to take part?

Participation is entirely voluntary. If you agree to take part, we will then ask you to read and complete the consent form.

You are free to withdraw at any time, without giving a reason. It should be noted, however, that once anonymised data has been merged into the data set and analysis begun, it will not be possible to withdraw individual data.

What will I have to do?
You will be invited to complete an online Delphi questionnaire which will take approximately one hour to complete. The questionnaire will be structured to address a specific topic, and the aim will be to achieve consensus amongst a group of your clinical colleagues with respect to the topics listed above. The questionnaire will be recorded without your personal details.

You will also be asked to attend a semi-structured interview to help us to understand your opinions about the efficacy of changes resulting from a clinically agreed pathway and the enablers and barriers to successful implementation and sustainability. The interview will be recorded for transcription without your personal details and will last approximately 45 minutes.

Will my contribution to the study be kept confidential?
Yes. We will follow ethical and legal practice and all information about you, or that you contribute, will be anonymised and handled in confidence.
Your name will not be recorded in the study. An identifier will be coded to represent your role in the emergency care system **for any information we collect from you. These groups involve only a limited number of staff from the Accident and Emergency department, and any comments recorded may be attributed to your position. However efforts will be made to make all quotes anonymous.**

All recordings will be made using digital media files and transcriptions will also be held on electronic files. All files will be held on an encrypted computer for seven years and then be destroyed.

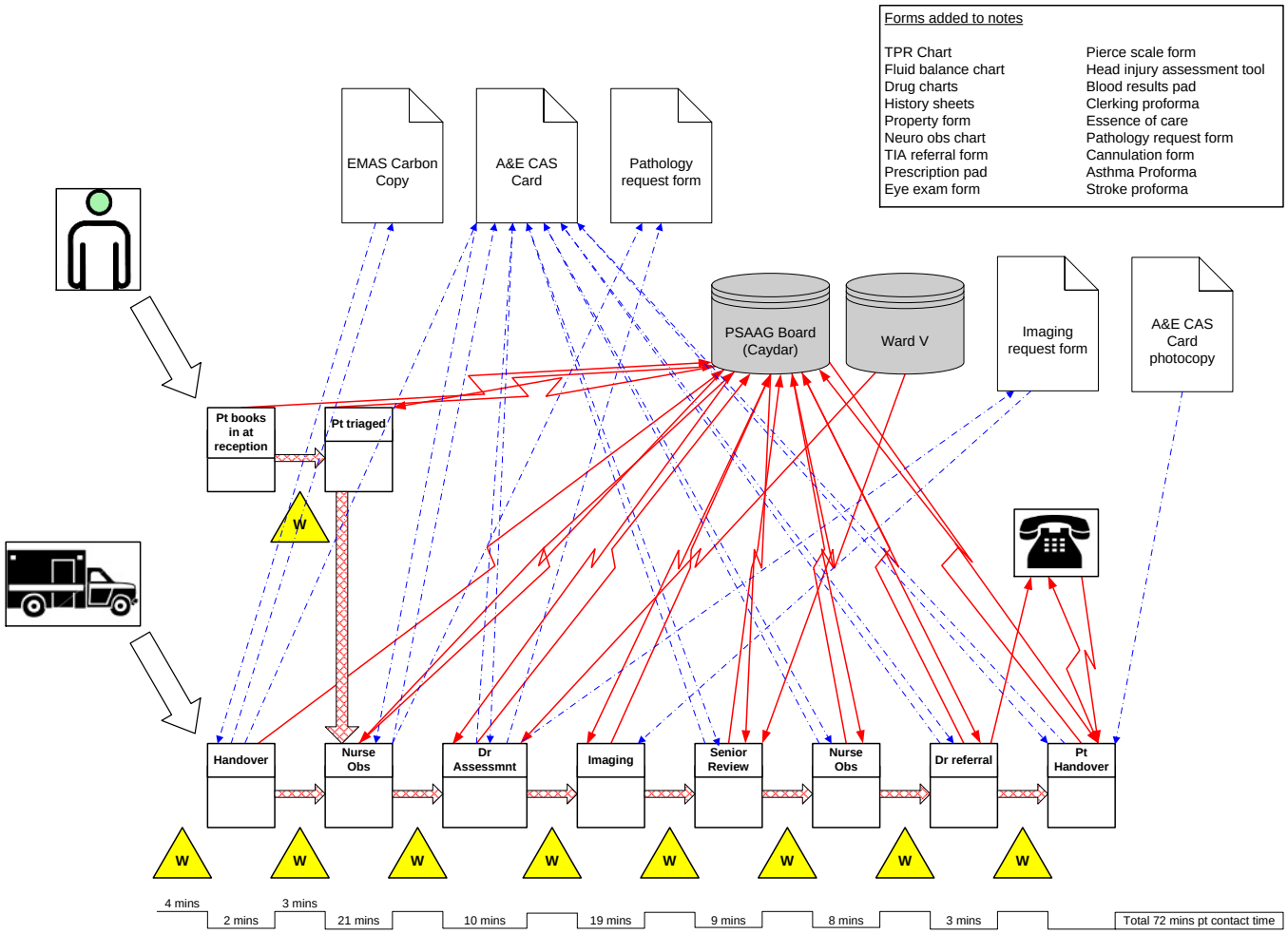
What if I have a complaint or concern?
If you have a concern about any aspect of this study, you should ask to speak to the principal researcher who will do his best to answer your questions [Paul Turner; CONTACT DETAILS WITHHELD].

If you remain unhappy and wish to complain formally, please contact the XXXX Trust customer care team on: XXXXX XXXXXX

Additionally complaints of academic nature can be addressed by Dr R Kane at the University of Lincoln:

Dr Ros Kane
Senior Lecturer
Faculty of Health Life and Social Sciences
Room 3114
Bridge House
University of Lincoln
Brayford Pool
Lincoln
LN6 7TS
01522 837326

Appendix 7: Value Stream Map



Appendix 8: Papers Published in the British Journal of Health Care Management

Following an agreement with the Editor, papers were published in series in the journal in order to keep a consistent record of the progress of this research in a relevant journal. They are presented below in chronological order of publication which is consistent with the research process.

POLICY AND GUIDANCE

Creating enterprise efficiencies in the English NHS

P Turner, R Kane, C Jackson

ABSTRACT

This review of the literature examines how political ideologies have converged around English health policy and why command and control management techniques using performance indicators and targets are used to achieve policy and judge its efficacy. Performance indicators and their role in an enterprise culture, which health policy has introduced to replicate the efficiency successes from the private sector, is evaluated in this article. The article concludes that although performance indicators are valuable for efficiency improvement, the way they are implemented and managed in the English NHS does not assure the successes seen in the private sector but can lead to damaging defensive management actions.

P Turner
Transformation Programme Manager, United Lincolnshire Hospitals NHS Trust

R Kane
Principal Lecturer, University of Lincoln

C Jackson
Principal Research Fellow, University of Lincoln

Email: Paulturner73@gmail.com

Submitted for peer review 20 May 2013; accepted for publication 25 June 2013

This literature review was conducted to address how needs-led indicators have been developed, what they are, to what extent are they implemented and if they lead to improvements in service delivery and quality of care in emergency departments (ED) in district general hospitals (DGHs). Indicators are used as a management tool to achieve such improvements yet the reality of outcomes observed through following target achievement can be controversial and damning as seen in the recent publication of the Francis report (2013). The review explores the cause and effect relationship between indicator use and performance outcome.

Search strategy

Keywords relating to healthcare indicators are used with the relevant thesaurus headings to form the strategies in database and grey searches. Limits to the search were (where available): major concepts for thesaurus headings, English language articles, abstracts available and published from year 1980 onwards. Articles were rejected through the title and abstract if they failed the search criteria to further manage the appropriateness of the search contents.

Political policy shift to the enterprise culture

Health policy is important because it is a significant public issue which captures the attention of the electorate (Hunter, 2003; Baggott, 2007: 21). In addition, the cost of the NHS is a huge financial burden for the national purse (Pollock, 2005).

Traditional party tensions around health policy in election manifestos from the early years of the NHS (Bevan and Robinson, 2005: 56; Tudor-Hart, 2010) were transformed due to a convergence of ideology (Wall and Owen, 2003: 113–125). Since the financial constraints of the 1970s, the traditional political ideologies of conservatism (hierarchy and social order); neo-liberalism (free markets and individuals) and socialism (equality and state ownership) (Baggott, 2007: 6) have moved towards a free market system. Wall and Owen (2003: 34-39) term this system the enterprise culture—a system which looks to reduce the state monopoly of healthcare provision and adopt commercial influences to generate efficiency and resource use. Within the enterprise culture, public and private organisations compete to deliver healthcare within the NHS (Ross and Tomaney, 2001; Bevan and Robinson, 2005: 54) offering

centralisation of targets and decentralisation of management to monitor and control them (Wall and Owen, 2003: 163-167; Baggott, 2007: 130-153).

Health policy has concentrated on treatment rather than prevention, partly because the nation's short electoral cycles could not allow demonstration of a measurable improvement in health and the associated reductions in treatment spend. Good health upstream will equal less treatment downstream (Hunter, 2003: 161). Bevan and Robinson conclude that the policy changes and adaptations across political ideologies since the inception of the NHS have delivered sub-optimal performance in cost-control, equity of healthcare delivery and efficiency due to path dependencies (2005: 71). Hunter adds that health policy evolution has been based on 'complex solutions to complex problems' which has resulted in centralised, top-down targets (Hunter, 2003: 162-164).

Enterprise culture and performance indicators

To generate the efficiencies in the private sector, performance measurement is used as a key motivator and evaluation tool (Wall and Owen, 2003: 113–25). However, development of health policy to focus on performance indicators has come with an 'increasing use of command and control' tactics has necessitated centralised targets and regulation with the development of managers and agencies to deliver and assure performance (Baggott, 2007: 130–53).

The competitive market system, with its perception of a wasteful public sector, has led to an expectation that NHS managers will improve efficiency, (Wall and Owen, 2003: 57–70) using performance indicators as a measure of evaluating their success. However, there are criticisms of how management has developed within the NHS. Hunter considers the management function to be 'based crudely on traditional or 'Fordist' management' techniques (Hunter, 2003: 162), which ignore the complexity of healthcare with a loss of focus on system defects (Hunter, 2003: 182).

> ***...political use of punitive, centralised performance monitoring (command and control) and targets continues, despite criticism***

However, political use of punitive, centralised performance monitoring (command and control) and targets continues, despite criticism, partly because governments do not trust managers to implement policy service reforms in respect to their re-election aspirations (Hunter, 2003: 165). Hunter believes that the system of management should be focussed on leading for health rather than healthcare and that judgement of health systems should not be based on the analysis of 'politics and power' which has led to command and control and target cultures but instead towards analysis of 'defects and deficits' within the health system (Hunter, 2003: 182). The shortcomings of management in addressing such local deficiencies are a key finding from the Francis report into Mid-Staffordshire Hospital's 'serious failings' in providing care (Francis, 2013).

Using performance indicators to evaluate policy success has led to concern that blame is simply shifted from government to operational management through the devolved responsibility

> *Public views have shown to strongly question the value of managers, and managers themselves are criticised for being responsible for building a complex role around a management ideology that is driven primarily by efficiency and not patient care*

that command and control enforces (Baggott, 2007: 153). The number of targets to be achieved and the skills of NHS managers to achieve them (and other policy objectives) are criticised. Hunter believes that centralised targets focus managers away from long term organisational development, stifling innovation and improvement (2003: 165).

Fewer targets and greater skills for managers would allow them to be more creative (Hunter, 2003: 165–6). However, the proportion of NHS budget spent on management and administration is criticised. Pollock argues that such funding has increased since the introduction of the enterprise culture but has not delivered the improved efficiency that policy expected (2005: 260). Public views have also shown to strongly question the value of managers, and managers themselves are criticised for being responsible for building a complex role around a management ideology that is driven primarily by efficiency and not patient care (Learmonth, 1997: pp.216-220). Propper et al however, consider that managers' performance is shaped by policy arguing that, in their study of waiting time reductions in the English NHS, managers were presented with escalating targets, management sanctions and a greater focus on performance which combined achieved improved performance (2008: 21).

Effective use of indicators

Pronovost and Lilford discuss the tensions which exist between scientists and policy makers when using performance indicators (2011: 569) stating that policy makers are responsible for protecting the public interest and scientists are 'dubious about the validity of many metrics'. The introduction of performance indicators has shifted the focus of trust in a system from internal and unrecorded controls to quantified metrics, a move which Freeman argues 'may generate suspicion and fear' which undermines the improvements that the indicators should deliver (2002: 129).

Much is written about the gaming and subversive behaviour of trusts to meet targets (Bevan and Hood, 2006; Propper et al, 2008) although performance indicators are also recognised to achieve the control that policy expects (Alberti, 2007). Davies and Lampel acknowledge the effects that measuring and controlling performance had on waste and spend reduction and productivity increases in the NHS in the 1980s, and state that continuation was influenced by the successes in the private sector (ibid: 160). Now, however, they claim that the private sector is 'abandoning control as the key mechanism for achieving better results' in favour of decentralised autonomy to allow greater innovation and efficiency (ibid: 160). Indeed, in the most advanced innovative private companies 'questioning, coaching and teaching take precedence over commanding and controlling' (Shook, 2008: 2), but this means

managers having access to clear, unambiguous performance data to focus their resources. Womack emphasises that an organisation's purpose is crucial to defining achievement for the enterprise culture: what does the organisation need to do to improve customer (or patient and other stakeholder) satisfaction and what does the organisation need to do to survive and prosper? Managers responsible for delivering the defined and quantified customer value can then drive the improvements by concentrating efforts on processes and people (ibid: 3–9).

Goddard et al (1999) note that the nature (and reality) of using summative performance indicators is to manage poor performers rather than to identify best practice and encourage improved system-wide performance, despite improved performance being a key factor in performance management in an enterprise culture. Measurement systems are also deemed to be 'imperfect' and in need of improvement in order to remove 'imprecision and bias' in order to be useful to policy makers and health care providers (Pronovost and Lilford, 2011: 572). Chosen indicators must also evaluate the needs of the service users. Adab et al note that not all health care outcomes that society value can be measured and suggest that although the public and purchasers have the right to understand the quality of their health services it is 'irresponsible' to provide poor quality information that is difficult to interpret (2002: 96).

Furthermore, the disadvantages of using performance indicators to relieve health service pressure can lie within the historic nature of the indicators themselves. Performance indicators are incapable of 'showing why particular results were obtained' (Freeman, 2002: 130) and measure 'end of process error detection rather than built in quality' (Davies and Lampel, 1998: 160), meaning that delays in improvement can only occur after the event. This mis-use of performance indicators is endemic in the private sector too. Mauboussin states that common performance measures fail to comply with two tests of usefulness: that measurement systems will produce a consistent metric over time for the same action and that they demonstrate cause and effect to meet an objective (2012: 48–53). Davies and Lampel state concerns about drawing useful interpretation from unstable observational data and that measuring performance, which is motivational or coercive, will lead to behaviour that is not representative of the underlying process (1998: 160). A common theme in the literature is that the nature of performance indicators does not testify the reality of process performance but that evaluation of the results leads the individuals responsible for the underlying data into defensive action instead of innovation to improve the needs of their process (Davies and Lampel, 1998; Freeman, 2002; Bevan and Hood, 2006b). A reason for this may be found in research undertaken by Giuffrida et al (1999) who investigated the effect which factors outside the control of primary care services had on their ability to meet performance targets. This study concluded that 'performance indicators should relate to the aspects of care that can be controlled by decision makers'. Furthermore, Freeman stresses the need to remove confounding factors (i.e. local health economy and socio-economic variations) which may cause variation in the output being measured.

Performance indicators offer only limited prospects to identify opportunities in health services make necessary improvements. In an editorial for the *British Medical Journal*, Mulligan and Appleby (2000) question how well summative performance indicators help to 'identify which parts of a system contribute the most to improved health' and also question the extent to which those indicators show how

KEY POINTS

- Centralised target culture draws focus away from local long-term development and system defects and innovation.
- Enterprise efficiency comes from decentralised autonomy, not centralised command and control.
- Greater management skills and fewer targets are required to improve efficiency.

well the services measured affect the nation's health—considering 'people with poorer health in particular'. Mulligan and Appleby answer both questions with 'little' because they argue that there is no way of understanding such a complex system's details based on indicators alone. This is unfortunate because they consider that indicators are 'the only show in town' for managing health service improvement.

Conclusion

To replicate the success of enterprise, performance indicators and measures should be restricted to factors controlled by decision makers, using valid and un-confounded data with no cross complex system boundaries. This is unlikely in English health care because of the complexities of the system, the centralisation of targets and the command and control approach of monitoring and adjusting. Instead of empowered and skilled managers who embrace improvement opportunities shown by indicators, the NHS often encounters dear and defensive actions from managers the effects of which are described clearly in the Francis report. BJHCM

Adab P, Rouse AM, Mohammed MA, Marshall T (2002) Performance league tables: the NHS deserves better. *BMJ* **324**(7329): 95–8

Alberti G (2007) Emergency care ten years on: reforming emergency care. Available at: www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_074239 (accessed 25 June 2013)

Baggott R (2007) *Understanding Health Policy*. Policy Press, Bristol

Bevan G, Hood C (2006) What's measured is what matters: targets and gaming in the English public health care system. *Public Administration* **84**(3): 517–38

Bevan G, Robinson R (2005) The interplay between economic and political logics: path dependency in health care in England. *J Health Polit Policy Law* **30**(1): 53–78

Davies HT, Lampel J (1998) Trust in performance indicators? *Qual Health Care* 7(3): 159–62

Freeman T (2002) Using performance indicators to improve health care quality in the public sector: a review of the literature. *Health Serv Manage Res* **15**(2): 126-37

Goddard M, Mannion R, Smith PC (1999) Assessing the performance of NHS hospital trusts: the role of 'hard' and 'soft' information. *Health Policy* 48(2): 119–34

Hunter DJ (2003) Public Health Policy. Polity Press, Cambridge

Learmonth M (1997) Managerialism and public attitudes towards UK NHS managers. Journal of Management in Medicine **11**(4): 214–21

Mauboussin MJ (2012) The true measures of success. *Harv Bus Rev* **90**(10): 46–56

Mulligan J, Appleby J (2000) Measuring the performance of health systems. *BMJ* **321**(7255): 191–92

Pollock AA, Leys C (2005) *NHS Plc: The Privatisation of our Health Care*. Verso, London

Pronovost PJ, Lilford R (2011) A road map for improving the performance of performance measures. *Health Affairs* **30**(4): 569–73

Propper C, Sutton M, Whitnall C, Windmeijer F (2008) Did 'targets and terror' reduce waiting times in England for hospital care? *BE Journals of Economic Analysis & Policy: Contributions to Economic Analysis & Policy* **8**(2): 1–25

Francis R (2013) *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry: Executive Summary*. Available at: http://cdn.midstaffspublicinquiry.com/sites/default/files/report/Executive%20summary.pdf (accessed 25 June 2013)

Ross W, Tomaney J (2001) Devolution and health policy in England. *Regional Studies* **35**(3): 265–70

Shook J (2008) *Managing to Learn: Using the A3 Management Process to Solve Problems, Gain Agreement, Mentor and Lead*. Lean Enterprise Institute, Cambridge, MA

Wall A, Owen, BG (2003) Health Policy. 2nd edn. Routledge, New York, NY

Womack J (2011) *Gemba Walks*. Lean Enterprise Institute, Cambridge, MA

POLICY AND GUIDANCE

Enterprise efficiency framework: the English NHS

Paul Turner, Ros Kane, Christine Jackson

ABSTRACT

This article examines the implementation and efficacy of the enterprise culture: the policy to produce within the NHS the resource utilisation, quality and efficiency improvements demonstrated by leading private organisations. The article also considers the framework underpinning private sector best practice and offers a critical view of how it is reflected in the enterprise culture. The article concludes that despite some success in centralised measures, the enterprise culture does not meet the necessary framework to truly reproduce private sector improvements.

Key Words: Culture • performance indicator • NHS efficiency • improvement

Paul Turner
Clinical Improvement Manager, United Lincolnshire Hospitals NHS Trust

Ros Kane
Principal Lecturer, University of Lincoln

Christine Jackson,
Principal Research Fellow, University of Lincoln

Email: Paul.turner@ulh.nhs.uk

NHS improvement expectations were detailed in the NHS Plan (Department of Health, 2000); proposing more autonomy for the NHS to achieve greater healthcare performance (evaluated through targets and indicators) but with more managerial accountability for the increased investment. Failure to meet this 'aggressive target regime' carries heavy sanctions (Propper et al, 2008: 18), however achievement of performance targets may lead to reward (Propper and Wilson, 2003: 251; Department of Health, 2000: 67). This plan added to the evolving enterprise culture through which the NHS expects its component organisations to compete to reproduce the resource use, quality and efficiency successes of high-achieving private organisations (Turner et al, 2013).

Through the indicators, improved performance in key NHS policy process targets such as waiting time reduction (Bevan and Hood, 2006a; 2006b; Propper et al, 2008) and emergency care targets (Alberti, 2007) has been demonstrated.

Bevan and Hood (2006b: 533) suggest that two assumptions are made when governing through targets: synecdoche (assuming that conclusions about part of a population can stand for the whole) and game proof design, and conclude that neither assumption is justified in the NHS target governance structure. Propper et al (2008: 21) also state that attainment of a target may not result in wider welfare increases because 'reducing long waits does not necessarily lead to shorter mean or median waiting times'.

These targets attract 'incentives to cheat both by target setters and target managers' (Bevan and Hood, 2006b: 519) which may be negative (risk of dismissal and 'name and shame') or positive (bonuses and budget allocation), (Bevan and Hood, 2006b: 518-519). Using targets as a basis for praise or sanction is seen as 'almost inevitably corrosive and corrupting' as it places trust in systems and not individuals (Freeman, 2002: 134).

Data ambiguity, perverse outcomes and fabrication have also been reported when organisations' measurement of the indicator has contributed to target achievement (Bevan and Hood, 2006a). Freeman argues

that 'the precision of data required to make summative comparisons' between separate NHS trusts presents technical problems when using indicators which may lead to negative unintended consequences (2002: 134). Also, large occurrences of statistical outliers ('more variability than would be expected by chance alone') have been linked to NHS indicators (Spiegelhalter, 2005:347) leading to poor comparability.

However, even with uncorrupted information, indicators may not lead to useful relative performance management within the public sector. Variations in measures may be caused by local differences (clinical-mix, for example) and some adjustment may be necessary for the heterogeneity of the inputs (Propper and Wilson, 2003: 264).

Walburg (2006: 35) argues that the quality and selection of indicators can be over-simplified to make measurement possible and notes an equally important factor for using indicators: the means and frequency of data feedback, which is essential for 'permanent improvement' from indicator use. Furthermore, definition and administration of health policy delivery is devolved to multiple government agencies. Some indicators were developed by separate agencies which conflict with each other, causing confusion at a local level as to which indicator or target achievement takes priority, problems in establishing relationships between indicators and misunderstanding when establishing connections between indicators and targets (Micheli and Neely, 2010).

Outcome and process indicators

A government white paper set out a framework to focus targets and indicators towards clinically credible health outcomes rather than 'process' targets (Department of Health, 2011). Health outcome indicators represent the 'final outcome of a patient encounter with the health sector' (Cameron et al, 2011: 735).

However, the use of internal process indicators to improve production and to achieve good health outcomes is still recommended (Mant, 2001: 479; Propper and Wilson, 2003: 264; Department of Health, 2010). Cameron et al (2011: 739) suggest a combination of indicator types concluding that indicators need to be set to stimulate improvement towards the organisation's priorities. Because these indicators are locally developed they are not useful for national comparison (Cameron et al, 2011: 739).

Achievement of a suitable target with a reliable central outcome indicator may be at the expense of local needs and demands and can lead to managers doing what was expected of them rather than what was desirable locally (Hunter, 2003:95). Whitehead et al (2010:1374) note that risks to equity can result from financial penalties linked to health outcomes if 'providers focus their efforts on healthier more affluent populations for whom improved outcomes would be easier to achieve'.

To summarise, the use of targets and indicators, developed to drive and measure the efficacy of the enterprise culture, have shown nationally positive improvements but are criticised for appropriateness of use, ignorance of local issues and unintended and damaging consequences.

Enterprise best practice

Womack argues that successful enterprise improvements come from a framework of clear (quantified) purpose, robust processes and capable, empowered people, (2011), the Purpose, Process, People (PPP) framework.

This system of producing quality and efficiency is supported, not controlled, by a finance and management structure which 'stresses that problem solving is the most important part of any job' (Womack et al. 2007: 204).

All managers are expected to work 'on the shop floor', rotating through design, supply, production and customer relations because they believe that 'the point of production is where value is truly added' and leads to a culture where a managers' role is to teach empowered workers to solve 'increasingly challenging problems' (Womack et al. 2007: 204). However Womack et al emphasise—in an afterword in the 2007 publication—that problem solving is the final portion of the system that is implemented and must follow the introduction of well-defined and managed standard processes (2007: 290).

This systemic view is designed to generate efficiency through quality (Womack et al, 2007: 73) which is the best practice underpinning the enterprise culture within healthcare.

In a publication for a conference for health care improvement, Womack and Miller state that all value (achievement of purpose) 'is the result of a process' which should be the focus of managers' attention (2005:3). The efficiencies of a successful enterprise can only come from a process where purpose is clear and an organisation must 'accurately specify the value desired by the customer'.

Advising healthcare leaders on how to implement PPP, Womack and Miller observe that organisations are often not structured to meet process perfection. Most organisations are vertically structured, in departments with a responsible manager, but with processes that flow horizontally, towards the patient (2005: 17). To overcome these organisational issues, Womack and Miller suggest that health care organisations match the organisation to the process, identifying and empowering a process owner to manage value vertically (2005).

Applying enterprise best practice to the NHS

Healthcare has faced criticism for its capability to undertake changes which lead to improved safe, reliable outcomes (the purpose), which Frankel et al argue is a result of differences in the characteristics of healthcare organisations and those of high reliability industries (2006: 1690–1).

One characteristic is the people and process based element of organisational culture where the NHS 'anomie' of underpowered and organisationally restricted people do not think in terms of process or systems (O'Regan, 2006: 123). The weaknesses of the NHS culture (leadership and respecting, and listening to, staff) and the prevalence of fear and suspicion were key criticisms of the failings in safe health care and the tragic outcomes (high mortality rates) found in the public inquiry, chaired by Robert Francis QC, into the Mid-Staffordshire NHS Foundation Trust's performance failings (Public Inquiry, 2013).

An unintended result of the introduction of internal markets and a drive for efficiency through the enterprise culture is the inability of people to change process and meet local need (purpose). The drive for efficiency pitched one health authority against another creating internal service rivalry which 'led to a reinforcement of clinical empires and ring fencing of departmental boundaries' (O'Regan, 2006: 123). O'Regan argues that this characteristic of 'strong vertical lines demarcating roles and the provision of services' (2006:123) produces differentiation which, with centralised command and control, focuses 'all the attention on externally imposed targets' with 'little thought given to the internal needs of the organisation' or its patients (2006:124).

Pronovost et al also consider the relationship between people and process in delivering safe healthcare, and recommend that a framework is implemented that encompasses organisational culture by targeting senior managers, team leaders and front line staff by educating them in facilitating change management and standardised operations, or processes (2006:1612).

The shortcomings of some individual hospitals, Pronovost et al argue, are the limited resources which are insufficient to develop measures and collect data necessary to fulfill the framework (2006: 1612). This suggests that implementation across a consortium of hospitals be considered. However, this centralised approach to change management and process frameworks bears the same limitations with the centralised approach to targets and indicators, while failing to address local defects and systems which cause quality issues (Hunter, 2003: 101–36; O'Regan, 2006) identified in the Francis report (Public Inquiry, 2013).

Process complexity and insufficient time to implement change are common factors in public sector organisations that may lead to undesirable results (Hunter, 2003: 126–36) and policy ensures that public sector responses to complex problems are complex answers (Hunter, 2003: 162–4). Allder et al (2010) illustrate this with an example of process complexity and rigid organisation through research into bed

availability and patient flow through hospitals. The authors argue that complexities of bed availability is not resolved by adding more beds—which just adds more complexity to the system—but by taking a system perspective to understand different patient dynamics and to smooth predictable but varied demand that the process amplifies as the patient moves through hospital departments (Allder et al, 2010: 14–5).

Additionally, design and application of the process to meet user demand, a key criterion of best-practice and system thinking, must be considered. Silvester et al state that the 'majority' of capacity plans in the NHS are based on historic average and do not account for variation in demand or capacity which inevitably causes variation, and queues (2006: 109) which PPP and system thinking is designed to eradicate (2004: 105).

Discussion

NHS enterprise culture has limitations in its ability to reproduce the successes of leading private sector organisations because of the differences between the NHS centralisation of targets and processes compared with the decentralised PPP approach of leading private sector organisations. The culture of fear and suspicion is reduced in successful enterprises because indicators are used for feedback for improvement through structured management and an empowered workforce (not to manage the poorly performing). Metrics show the potential and improvement is delivered through an experiment to change. Furthermore, command and control misses the key point of enterprise benefits: the need for capable management to define customer purpose and standardise processes that allow people to understand and fix the local complexities to achieve improvement and competitive efficiency.

The implementation of competition and command and control techniques using inappropriate, centralised indicators through decentralised, unpowered managers has not achieved the sustained benefits expected in the policy. This is because the conceptual framework of enterprise efficiency has not been applied or, perhaps, fully understood. In the NHS culture, suspicion and fear replace the innovation and opportunity that indicators present to the enterprise culture, as the tragic events described in the Francis report attest.

The expectations of policy may be defined but managers and staff are not always capable of implementing sufficient changes because the underlying enterprise improvement framework, organisational structure and skills are absent. BJHCM

Alberti G (2007) Emergency care ten years on: reforming emergency care. Available at: www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_074239 (accessed 10 November 2010)

Allder S, Silvester K, Walley P (2010) Managing capacity and demand across the patient journey. *Clin Med* 10(1): 13–15

Bevan G, Hood C (2006a) Have targets improved performance in the English NHS?. *BMJ* **332**(7538): 419–22

Bevan G, Hood C (2006b) What's measured is what matters: targets and gaming in the English public health care system. *Public Administration* **84**(3): 517–38

Cameron PA, Schull MJ, Cooke MW (2011) A framework for measuring quality in the emergency department. *Emerg Med J* **28**(9): 735–40

Department of Health (2000) The NHS Plan: a plan for investment, a plan for reform. Available at: www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4002960 (accessed 8 November 2010)

Department of Health (2010) *Equity and Excellence: Liberating the NHS.* Department of Health, London

Department of Health (2011) Liberating the NHS: Legislative framework and next steps. Available at: www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_122661 (accessed 27 May 2011)

Frankel AS, Leonard MW, Denham CR (2006) Fair and just culture, team behavior, and leadership engagement: the tools to achieve high reliability. *Health Serv Res* **41**(4 pt. 2): 1690–709.

Freeman T (2002) Using performance indicators to improve health care quality in the public sector: a review of the literature. *Health Serv Manage Res* **15**(2): 126-37

Hunter DJ (2003) Public Health Policy. Polity Press, Cambridge

Mant J (2001) Process versus outcome indicators in the assessment of quality of health care. *Int J Qual Health Care* **13**(6): 475–80

Micheli P, Neely A (2010) Performance Measurement in the Public Sector in England: Searching for the Golden Thread. *Public Administration Review* **70**(4): 591–601

O'Regan DJ (2006) The NHS: business and sociological

KEY POINTS

- Targets and indicators that meet local needs, drive improvement
- Management capability and organisational rigidity affect systemic improvement in the NHS
- The enterprise culture in the NHS does not consider the key PPP framework of leading private organisations

paradigms. *Clinician in Management* **14**(3): 123–8

Pronovost PJ, Berenholtz SM, Goeschel CA, Needham DM, Sexton JB, Thompson DA, Lubomski LH, Marsteller JA, Makary MA, Hunt E (2006) Creating high reliability in health care organizations. *Health Serv Res* **41**(4 pt. 2): 1599–617

Propper C, Wilson D (2003) The use and usefulness of performance measures in the public sector. *Oxford Review of Economic Policy* **19**(2): 250–67

Propper C, Sutton M, Whitnall C, Windmeijer F (2008) Did 'Targets and Terror' Reduce Waiting Times in England for Hospital Care? *BE Journals of Economic Analysis & Policy: Contributions to Economic Analysis & Policy* **8**(2): 1–25

Public Inquiry (2013) Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry: Executive summary. Available at: http://cdn.midstaffspublicinquiry.com/sites/default/files/report/Executive%20summary.pdf (accessed 1 November 2013)

Silvester K, Lendon R, Bevan H, Steyn R, Walley P (2004) Reducing waiting times in the NHS: is lack of capacity the problem? *Clinician in Management* **12**(3): 105–9

Spiegelhalter DJ (2005) Handling over-dispersion of performance indicators. *Qual Saf Health Care* **14**(5): 347–51

Turner P, Kane R, Jackson C (2013) Creating enterprise efficiencies in the NHS. *BJHCM* **19**(7): 330–4

Walburg J (2006) 'Principles of perfromance management'. In: *Performance Development in Healthcare: Improving Patient Outcomes: An Integrated Approach*. Routledge, London

Whitehead M, Hanratty B, Popay J (2010) NHS reform: untried remedies for misdiagnosed problems?. *Lancet* **376**(9750): 1373–5

Womack JP, Miller D (2005) *Going Lean in Health Care*. Institute for Healthcare Improvement Cambridge, MA.

Womack J (2011) *Gemba Walks*. Lean Enterprises Inst Inc

Womack JP, Jones DT, Roos D (2007) *The Machine That Changed the World: The Story of Lean Production--Toyota's Secret Weapon in the Global Car Wars That Is Now Revolutionizing World Industry*. Free Press

POLICY AND GUIDANCE

The efficacy of the enterprise culture in the English NHS

Paul Turner, Ros Kane, Christine Jackson

ABSTRACT

This article examines the role and appropriateness of different research paradigms in exploring whether the enterprise culture (the NHS policy to produce resource utilisation, quality and efficiency improvements demonstrated by leading private organisations) has provided a framework for performance improvement in a rural district general hospital (DGH).
The discussion and conclusions are intended to provide a broad understanding of different paradigms and methodologies in order to inform choice for a robust research protocol for a PhD study. The article is also intended to be used as a guide to other researchers in this area. The paper concludes that a stance between realism and idealism, positivism and interpretivism applied through a mixed-methodology is justified to design the research protocol.

Key Words: Emergency care • Methodology • Paradigm

Previous articles in this series examine the literature concerning the enterprise culture. The efficacy of the enterprise culture to meet policy is challenged. Resolution of local performance issues are unlikely due to centralised targets and command and control techniques which drive managers defensive action instead of improvement (Turner et al, 2013a). Furthermore, the best-practice framework used by successful enterprises is not evident in the rigid organisational structure of the NHS (Turner et al, 2013b).

The review of the literature undertaken in the above two articles led to the identification of the following research questions:

- What is the nature of the emergency service users' demand?
- What characteristics of the enterprise culture exist in the emergency departments (ED) and what are their effects on performance against the four-hour wait target?
- To what extent have the ED adopted private enterprise best practice framework in order to achieve the aims of the enterprise culture?
- How can the private enterprise best practice framework or other best practice method be introduced to meet the needs of the local emergency care system?

Ontological and epistemological considerations

Snape and Spencer consider that one of the social researcher's 'key ontological debates surrounds whether there is a captive social reality and how it should be constructed' (2003: 11). This leads to their definition of three 'broad' ontological stances: realism, idealism and materialism (Snape and Spencer, 2003: 11). A realist position considers that reality exists independently of our beliefs and understanding. Materialists also consider that reality exists independently of our beliefs and understanding, but that only the material or physical world is real. Idealists take the view that no reality exists independently of

Paul Turner
Clinical Improvement Manager, United Lincolnshire Hospitals NHS Trust

Ros Kane
Principal Lecturer, University of Lincoln

Christine Jackson
Principal Research Fellow, University of Lincoln

Email: Paul.turner@ulh.nhs.uk

'Toyota has the maxim of achieving excellent quality in their purpose through people striving for a perfect process'

our beliefs and understanding, or that the world exists only as people perceive it.

The literature describes a multifarious system of rigid organisational structures and rules and complex social and relational phenomena, which together produce a varied level of output when viewed through performance indicators (Turner et al, 2013b). This presents the researcher with an environment where the ontological assumptions made to 'talk about being' (Crotty, 1998: 11) need to consider two distinct causal features when examining their relationship with the effect on performance: organisation structure and social nature.

Toyota, the pioneering organisation that led Womack et al's seminal work on successful private organisations' efficiency and effectiveness techniques, which the enterprise culture looks to reproduce (2007), has the maxim of achieving excellent quality in their purpose through people striving for a perfect process. A former Toyota Chairman, Fujio Cho, stated that 'We get brilliant results from average people managing brilliant processes, while our competitors get average or worse results from brilliant people managing broken processes' (Chartered Quality Institute, 2013). Also, the process and organisational structures within the enterprise culture have an objective causal relationship with performance outcomes (Turner et al, 2013b). These conclusions tends towards the realist assumption; of distinction between the reality of the world and the meaning given to it by individuals' perceptions (Snape and Spencer, 2003: 11).

However, many of the potential causes of healthcare performance issues identified in the literature are not derived from a typical realist view. Social structures and interaction and the 'average person' depicted by Toyota are complex and hard or impossible to measure, however such factors 'can always be quantified' and represented in a quantified model (Richmond, 2004: 31). Although these aspects are often omitted from a realist model because of the difficulty in measuring, these complex beliefs and tensions are critical and need to be investigated to 'address research questions that require explanation or understand social phenomena in their social contexts' (Snape and Spencer, 2003: 5).

As a systems engineer, the researcher in the PhD study addressing the research questions is drawn to the realist position where laws and models are created to demonstrate outcome variation. However the adoption of an idealist aspect, and thus a rejection of the pure materialist approach, must recognise the weight and qualitative nature of the social tensions.

The research will take the ontological view that reality within emergency care systems is created through a function of complex social structures and the existence of a reality that is influenced by organisational laws and models. This is necessary to explain their influence and resulting performance shown in the indicated outcome; to contribute to the cause and effect model build; and to enable intervention in terms of a realist framework, which enterprise best practice and the enterprise culture use.

The ontological stance selected is a position between the realist and idealist extremes, adopting the critical realism position based on Bhaskar's writing on transcendental realism (1978; 1979). Critical realism allows researchers to 'explain the mechanisms that influence information seeking, not only on an empirical level, but also by revealing possible underlying causes and relations' (Wikgren, 2005: 11). By examining these 'generative mechanisms' (the interplay of conditions) 'that give rise to the demi-regularities we observe and experience daily' one 'might signify the actualization of a causal mechanism' (DeForge and Shaw, 2012: 85). In private sector best practice, the equation $y=f(x)$ is used to examine causal mechanisms and eliminate defects (Antony et al, 2007: 247). Here, y is an outcome, x are the inputs and f is the function of how the inputs interact to create the output (function of inputs equates to the interplay of conditions described by DeForge and Shaw).

Snape and Spencer describe two epistemological stances for how it is possible for a researcher to 'know about the world' (2003:16). Positivism assumes that 'the world is independent of and unaffected by the researcher' and that quantitative research techniques are appropriate to social research 'because human behaviour is governed by law-like regularities' (Snape and Spencer, 2003: 16).

Interpretivism assumes that human behaviour is not governed in such a way and that the researcher must understand social structures in a qualitative way, using the 'participant's and the researcher's understanding' (Snape and Spencer 2003: 16). Green and Thorogood add a second 'qualitative tradition', constructivism which looks to understand how social processes construct phenomena (2004: 13).

The epistemological stance selected follows the ontological position where a quantified, positivist approach is deemed necessary to fit understanding and intervention to an improvement framework, but which relies heavily on an interpretative approach to identify the social tensions and construct them into the cause and effect examination framework. This leaves an epistemology in the middle of the positivist and interpretivist poles which allows critical realism to appreciate and value 'context-specific conditions' (DeForge and Shaw, 2012: 85).

Although it views human behaviour through scientific implication, positivism is criticised for its lack of regard for human individuality implying that human behaviour is passive or controlled by 'law-like ways' (Green and Thorogood, 2004: 12–25). Turner et al (2013b) describe evidence of such law-like ways and structures within the enterprise culture but also criticise its ability to produce expected results because of the influence of complex social interactions which are difficult to appraise objectively.

The interpretivist view that reality is complex, unpredictable and not suitable to objective study and that an outcome has many interlinked causal factors (Green and Thorogood, 2004: 12–25) is also deemed necessary to produce a fuller knowledge of the cause and effect framework.

Selecting the appropriate paradigm

In selecting the paradigm, consideration is given to the nature of the social phenomena studied. Although the enterprise culture relies on an objective regime (the command and control structure described in the literature) and would expect such models as managerial and target frameworks to deliver results, the findings from the literature review also reveals a complex, human behavioural aspect which is suitable for interpretative study. Furthermore, the base of knowledge required to make an intervention towards enterprise best practice relies on an understanding of the complexities of purpose, process and people (Turner et al, 2013b). This knowledge is determined from an interpretive study of individuals and the environment or system.

The study has a clear need for knowledge of the social reality of behaviour within the emergency system which should be reflected in the chosen qualitative paradigm. However, as there is a requirement for an intervention determined by systemic framework and demonstrable by indicators a suitable quantitative paradigm is also required.

The review of ontology and epistemology has led to the research being based on a paradigm comprising a combination of qualitative and quantitative methods to meet the stance between realism and idealism, positivism and interpretivism. Although qualitative paradigms overcome concerns about studying social structures through objective science, qualitative techniques are criticised because of the nature of subjectivity and meaning which produce 'no definitive account or explanation' (Snape and Spencer, 2003:9).

This paradigm is selected to balance the risk of uncontrolled or unidentified study of causal variables from qualitative stances and the risk of reliance on statistical testing to define and

'Social structures and interaction and the 'average person' depicted by Toyota are complex and hard or impossible to measur'

progress scientific research (Kaplan and Duchon, 1988: 572).

Developing a suitable research design

A mixed method research is selected to use qualitative data to provide 'meaningful social context' (Bowling, 2009: 381) to quantitative data to fulfil the paradigm justified in this research. Mixed method research combines at least one method from both qualitative and quantitative techniques (Simons and Lathlean, 2010). Mixing methods is argued as useful 'to account for, and reflect on, the increasing complexity of contemporary understandings of health and health care' because healthcare is delivered through multidisciplinary teams that have multiple sources of knowledge which can only be studied using more than one research method (Simons and Lathlean, 2010: 332). Critics of mixed methods consider that the 'nature of reality and truth is different in each paradigm' because complex meanings from qualitative approaches generate multiple truths but quantitative objectivity is measured at one point (Simons and Lathlean, 2010:333). However, Tashakkori and Teddlie (1998: 20–39) state that the research question and not the paradigm should dictate the research method, but draw attention to logic of the combination and sequence of the methods used which should be informed not only through the research question but also the researcher's 'epistemological commitment and ontological views'.

Mixed methods have compelling features which are appropriate to answering the research question of this study. Purposes for using mixed methods include triangulation and facilitation. Triangulation—using three or more methods to verify findings by 'independent sources' (Bowling, 2009: 392)—will help to understand the ED needs from the different perspectives of the multiple teams engaged in an ED. Facilitation, taking findings from one method to inform subsequent stages of the research, enables improvements to be designed within context of earlier findings (Tashakkori and Teddlie, 1998). In this research observations and numerical and categorical data about ED systems will be used as a basis for gaining consensus of the system's needs and then statistical testing will be used to challenge how successful needs-led changes would be.

This research is largely interpretive in nature but uses quantitative methods for reasons of triangulation and facilitation of the study to allow judgements and intervention to be made within a system framework and the research question to be answered.

Conclusion

The rigid organisational structures and complex social and relational phenomena represent a research environment with aspects of reality both independent of, and heavily influenced by, human perception. By adopting a critical realist stance, the research seeks to examine the mechanisms of cause and effect. The examination will follow a broadly positivist approach to create a framework for intervention, but which will include interpretive assumptions to reflect the social constructs inherent in the research environment.

Mixed methods will be used to design a research protocol in order to provide facilitation and triangulation to the research and minimise the risks of an ontological and epistemological stance split between the extreme positions. BJHCM

References

Antony J, Downey-Ennis K, Antony F, Seow, C (2007) Can six sigma be the 'cure' for our 'ailing' NHS? *Leadership in Health Services (Bradford, England)* **20**(4): 242–53

Bhaskar R (1978) *A Realist Theory of Science*. 2nd edn. Harvester Press, Brighton

Bhaskar R (1979) *The Possibility of Naturalism: A Philosophical Critique of the Contemporary Human Sciences*. Harvester Press, Brighton

Bowling A (2009) *Research Methods in Health: Investigating Health and Health Services*. McGraw-Hill International

Chartered Quality Institute (2013) [online] Chartered Quality Institute. Available from www.thecqi.org/Knowledge-Hub/Resources/The-Quality-Survival-Guide/Surviving-processes/

Crotty M (1998) *The Foundations of Social Research: Meaning and Perspective in the Research Process*. SAGE Publications, London

DeForge R, Shaw J (2012) Back- and fore-grounding ontology: Exploring the linkages between critical realism, pragmatism, and methodologies in health & rehabilitation sciences. *Nursing Inquiry* **19**(1): 83–95

Green J, Thorogood N (2004) *Qualitative Methods for Health Research*. SAGE, London

Kaplan B, Duchon D (1988) Combining qualitative and quantitative methods in information systems research: A case study. *MIS Quarterly* **12**(4): 571–86

Richmond B (2008) *An Introduction to Systems Thinking*. isee systems

Simons L, Lathlean J (2010) *The Research Process in Nursing*. John Wiley & Sons, Chichester

Snape D, Spencer L (2003) *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. SAGE, London

Tashakkori A, Teddlie C (1998) *Mixed Methodology: Combining Qualitative and Quantitative Approaches*. SAGE, London

Turner P, Kane R, Jackson C (2013a) Creating enterprise efficiencies in the NHS. *British Journal of Healthcare Management* **19**(7): 330–34

Turner P, Kane R, Jackson C (2013b) Enterprise efficiency framework: The english NHS. *British Journal of Healthcare Management* **19**(11): 540–44

Wikgren M (2005) Critical realism as a philosophy and social theory in information science? *Journal of Documentation* **61**(1): 11–22

Womack JP, Jones DT, Roos D (2007) *The Machine That Changed the World: The Story of Lean Production-- Toyota's Secret Weapon in the Global Car Wars That Is Now Revolutionizing World Industry*. Free Press

KEY POINTS

- Research in the enterprise culture should consider rigid organisational structures and laws and complex social relationships.
- A research paradigm which adopts a critical realist stance is justified to reflect these qualitative and quantitative elements

POLICY AND GUIDANCE

Combining methods to research an emergency department: a case study

Paul Turner, Ros Kane, Christine Jackson

ABSTRACT

The purpose of this article is to discuss and justify a research strategy to be used within a mixed methodology study of the enterprise culture (EC)—the NHS policy to produce resource utilisation, quality and efficiency improvements demonstrated by leading private sector organisations. The findings are also a guide to other researchers in this area. It concludes that a single site case study approach is justified to research a deductive theory in a combination of methods that has a dominant quantitative element.

Key Words: Deductive theory • mixed methods • emergency department • enterprise culture • capacity planning

This article is the fourth in a series recording the PhD study undertaken by the principal author. The first article discussed the convergence of political policies which led to the evolving enterprise culture (EC) as a means to reproduce performance efficiency demonstrated in leading private sector organisations. It is argued that the EC approach of centralised performance targets lacks the focus on improvement opportunities within the control of an empowered decision maker, which generates private sector success (Turner et al., 2013a). This research is focused on the English NHS, however, the methodology can be used as a guide to domestic or international research of comparable theories.

The second article examines the differences between the structures of the EC in the English NHS and that of successful private sector organisations The literature reveals that the EC has a limited ability to reproduce private sector success. In the EC, centralised targets, rigid organisations structures and management capability issues are enacted in an often fearful and suspicious culture. The best private sector practices produce efficiency and quality through a framework which strives to achieve a clear purpose using empowered and capable staff who follow capable processes: the Purpose, Process, People (PPP) framework (Turner et al., 2013b).

In the third article, it is argued that this combination of organisational and procedural structures and complex social relationships warrants an ontological and epistemological stance between realism and idealism, positivism and interpretivism. A mixed-method paradigm is justified under a broadly positivist approach to examine the mechanisms of cause and effect (Turner et al, 2014).

In summary, the theoretical underpinning of the study is to challenge and test if the EC

Paul Turner
Clinical Improvement Manager, United Lincolnshire Hospitals NHS Trust

Ros Kane
Principal Lecturer, University of Lincoln

Christine Jackson
Principal Research Fellow, University of Lincoln

Email: Paul.turner@ulh.nhs.uk

has provided a framework for performance improvement in a rural district general hospital (DGH). In testing this theory, the complexity of the adaptive nature of the system is examined as part of the performance cause and effect relationship. Although Keogh acknowledges the breadth of emergency care—which covers a wide spectrum of needs from advice for self-care-help to major trauma cases (Francis, 2013:12)—this research focusses on care provided in the DGH emergency department. The research questions confirmed to test this theory are:

- What is the nature of the emergency service users' demand?
- What characteristics of the enterprise culture exist in the emergency departments and what are their effects on performance against the four-hour wait target?
- Hypothesis: the private enterprise framework adopted by the emergency department is successful in achieving the aims of the enterprise culture
- How can the private enterprise best practice framework or other best practice method be introduced to meet the needs of the local emergency care system?

Theory

In a quantitative study, a theory is developed deductively as a framework to generate research questions and hypotheses by which to confirm or disconfirm its validity (Creswell, 1994: 87). In qualitative studies, a theory emerges though an inductive approach of data collection and analysis, and comparison to other theories (Creswell, 1994: 94).

Womack argues that the PPP framework allows private enterprises to make efficiency improvements using clear (quantified) purpose, robust processes and capable, empowered people (2011). The PPP framework is suggestive of deductive organisational theories. Organisational theories assume organisations to be 'machine-like' entities which use defined functions and roles carried out by replaceable people to produce predictable and replicable results (Anderson et al., 2005: 671).

In the previous article, we emphasised the importance of PPP as a basis for the success of the EC by quoting Toyota's maxim of high performance through 'average people managing brilliant processes' (Turner et al, 2014). However, it is important to note a distinction between automatons and empowered, responsive and well-coached staff. Toyota's people 'manage' and problem solve the brilliant processes in an empowered manner and through a coaching regime under superiors who have been grounded in all levels of the organisation (Turner et al., 2014). While PPP may partially fit organisational theories, the improvement through empowered and innovative personnel in a complex personal

and social development environment does not.

Anderson et al argue that the unsuccessful adoption of EC practices in health care is because 'a system can be understood only as an integrated whole' (2005: 672). Because health care organisations are complex adaptive systems, Anderson et al. justify the application of complexity theory to examine the relationships of the component parts (2005: 672) since complexity theories assume that 'employees work in a common direction through self-control' (2005: 671). This tension between a deductive theory, derived to test a robust framework, and an inductive theory developed from understanding the self-control of the workforce is inescapable in this mixed method study. However, as argued, both framework and people are important aspects of private enterprise success.

It is accepted that examining the complex adaptive health care workforce is necessary and a potential cause of poor performance improvement in the English NHS. However, the literature review leads to the deductive reasoning that the EC is not reproducing performance improvement because the EC framework is very different from that in private sector best practice (Turner et al, 2013a; Turner et al, 2013b). The self-control enacted by the NHS workforce cannot lead to positive results if the framework to empower the staff to a common purpose (or direction) is not in place.

Combining methods

In 1994, Creswell first defined three models of combining quantitative and qualitative paradigms (Creswell, 1994: 177). The two-phase design undertakes both paradigms in separate phases and allows assumptions to be drawn from each. The dominant–less dominant design 'presents the study within a single dominant paradigm' with the other contributing a smaller component. The mixed methodology design mixes the paradigms at 'all or many of the methodological steps' (Creswell, 1994: 177). However, Tashakkori and Teddlie consider Creswell's classification of mixed methodology design belongs to an earlier step in the evolution of combining studies (1998: 15–53). As the qualitative-quantitative distinction is wider than applying both aspects to one study, Tashakkori and Teddlie argue that the next step is 'mixing models' (in which qualitative and quantitative paradigms are mixed within stages of the study) which 'more accurately reflects the research cycle' (1998: 52). Sandelowski develops this theme of classifying combined methods into research templates noting that combined studies are not only mixtures of paradigms but of what techniques to combine and how and why to combine them (2000:247) as 'methods, like paradigms are not specifically linked to techniques' (2000: 248).

This pragmatic approach assumes that researchers view the research question to be more important than the method or paradigm (Tashakkori and Teddlie, 1994:21). The breadth and combinations of techniques available to the pragmatic approach offer the opportunity to 'provide a fuller description of cases' and 'guide purposeful sampling' (Sandelowski, 2000: 251–252).

Care must be taken not to abuse the 'limitless' possibilities of mixing so many available techniques. Although they may offer convergent validity and triangulation, without a 'clear view of their viewing positions and what dynamic mixes they suggest or permit', researchers could lose the completeness they seek in their study (Sandelowski, 2000: 249–54).

The deductive theory for this study that was derived from the literature review suggests a dominant quantitative element, using less dominant qualitative techniques to develop a framework to explore the expected causal relationships. This study will adopt a pragmatic selection based on the evolution of Creswell's work, this will be guided through a dominant–less dominant design which aims to test the deductive theoretical framework and resists the risk of unstructured research and that 'more is better' (Sandelowski, 2000: 254).

Research strategy

When selecting the most appropriate strategy to apply to research involving a social element, Yin argues that three criteria should be considered: the nature of research question to be answered;

the amount of control the researcher has over the events studied and the contemporary or historic focus of the research (2014: 9–15).

First, the research questions aim to examine and understand the cause and effect relationship and social phenomena of the enterprise culture in emergency department performance. Yin argues that strategies appropriate to this type of explanatory research should focus on 'operational links needing to be traced over time rather than frequencies or incidence': strategies appropriate to this type of research and theory include case studies, histories and experiments (2014: 10).

Cronin specifically argues that the case study researcher considers context in which multiple perspectives happen to understand 'the system being examined' (2014: 21). Anderson et al believe case studies are valuable to examine 'a phenomenon as an integrated whole' (2005: 681). Additionally, human and group behavior is difficult to capture in 'manufactured' evidence from experimental investigations and surveys which can happen under 'laboratory conditions'; ill-suited to specificity of real-life phenomena' (Gillham, 2000: 4–6).

Second, this research aims to test a theory by understanding the application of the enterprise culture in the rural English NHS emergency department. No control is assumed by the researcher over the phenomena or cause and effect relationships studied in the research environment. This eliminates experimental studies where control is necessary (Yin, 2014: 12–13).

Finally, Yin argues that the strategy should consider whether the focus is on contemporary or historic phenomena (Yin, 20144: 12-13). As the research is contemporary, a historical research is rejected and a case study approach is justified using Yin's selection criteria. Moreover, case studies offer the pragmatic researcher multiple sources of evidence which is 'major strength' of the strategy as they can be used to address a broader range of issues than strategies using single sources of evidence (Yin, 2014: 119). This range of sources, and available techniques to gather the evidence, enables study of the critical components and relations of a complex integrated system (Anderson et al, 2005; Bowling, 2009: 434). Additionally, multiple sources of evidence can be used for triangulation and validity of the research findings (Yin, 2014: 120) which is a key function of combining methods.

Anderson et al conclude when justifying case studies for studying complex health care systems that 'a key to knowing when to use case study lies in the nature of the research process' rather than past work and knowledge (2005: 681). The nature of this research process demands a study environment where complex social structures can be examined alongside rigid organisational frameworks.

A case study approach offers the ability to study these phenomena 'as an integrated whole' (Anderson et al, 2005: 681). Mazzocato et al adopted a mixed-method, single case site approach to examine the intervention of private sector best practice inspired framework in a Swedish emergency department (2012). This research was designed to 'track operational performance changes over time' and to 'describe the intervention and to provide data to help explain how the intervention worked based on four theoretical PPP principles' in their aim to add to the knowledge of why such interventions succeed or fail (Mazzocate et al, 2012:3).

Bowling notes concerns about generalising findings from case studies, which would affect relevant replication of the research (2009:434). However, Yin argues that importantly, the study is generalisable to the theoretic proposition, not as a sample of a population (2014: 21). Yin also discusses criticisms of bias and a lack of rigor in case studies and stresses the importance of a skilled researcher and well-designed method to mitigate the risks whilst noting that experimental research also carries the risk of bias (2014: 19–23).

Single case study sites are preferable to multiple sites in a number of situations, one of which is where the case is 'critical' in testing existing theory (Yin, 2014: 51–56). A single case study site is selected because of the nature of the critical case being examined—that of an emergency department in a rural DGH with performance measures below expectations, which could 'represent a significant contribution to knowledge and theory-building' (Yin, 2014:

51) for emergency care services in rural areas.

An analytical strategy is necessary to ensure sufficient presentation of collected evidence and consideration of any alternative interpretations (Yin, 2014: 133–36). Yin describes four general analytic strategies: one which relies on theoretical propositions; a second to develop a case description; a third to create concepts from data analysis and a fourth which examines rival explanations (2014: 136–42). This research uses the theoretical proposition strategy to study causal relationships adopting the 'explanation building' mode of analysis to 'stipulate a presumed set of causal links' (Yin, 2014: 147) necessary to test the theoretical proposition central to this study.

Conclusion

The study aims to conduct research into effectiveness and efficiency in the emergency department of a rural hospital using a mixed-methods approach, to create a framework for intervention (Turner et al, 2014).

Although the PPP framework is suggestive of organisational theories, the nature of health care systems is tends heavily towards complexity theories. This research adopts a deductive theory, which aims to test the organisational and social factors within the framework implemented by the enterprise culture and their effect on performance improvement outcomes.

A pragmatic view of combining methods allows limitless opportunities to test the theory–however, the study will adopt a dominant quantitative element to test the deductive theory and provide a guide to focus the research and avoid a loss of control. A case study approach is justified to allow a wide range of techniques to answer the research questions and examine the social and organisational elements through pragmatic selection and application.

This theory and the strategy to test it is broadly positivist but includes 'interpretive assumptions to reflect the social constructs inherent in the research environment' (Turner et al, 2014).

The next article in this will discuss the selection and quantitative analysis of the capacity and demand of the emergency department case site. BJHCM

References

Anderson RA, Crabtree BF, Steele DJ, McDaniel RR Jr (2005) Case study research: The view from complexity science. *Qual Health Res* **15**(5): 669–85. doi: 10.1177/1049732305275208

Bowling A (2009) *Research Methods in Health: Investigating Health and Health Services*. McGraw-Hill, Maidenhead

Creswell JW (1994) *Research Design: Qualitative and Quantitative Approaches*. Sage Publications, London

Cronin C (2014) Using case study research as a rigorous form of inquiry. *Nurse Res* **21**(5):19–27. doi: 10.7748/nr.21.5.19.e1240

Francis R (2013) *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry—Executive Summary*. Available at: www.midstaffspublicinquiry.com/report (30 January 2015)

Gillham, B. (2000) *Case Study Research Methods*. Continuum, London

Mazzocato P, Holden RJ, Brommels M, Aronsson H, Backman U, Elg M, Thor J (2012) How does lean work in emergency care? A case study of a lean-inspired intervention at the Astrid Lindgren Children's hospital, Stockholm, Sweden. *BMC Health Serv Res* **12**: 28. doi:10.1186/1472-6963-12-28

Sandelowski M (2000) Focus on research methods combining qualitative and quantitative sampling, data collection, and analysis techniques. *Research in Nursing & Health* **23**: 246–25. 0.1002/1098-240X(200006)23:3<246::AID-NUR9>3.0.CO;2-H

Tashakkori A, Teddlie C (1998) *Mixed Methodology: Combining Qualitative and Quantitative Approaches*. SAGE Publications.

Turner P, Kane R, Jackson C (2013a) Creating enterprise efficiencies in the NHS. *BJHCM* **19**(7): 330–34

Turner P, Kane R, Jackson C (2013b) Enterprise efficiency framework: The English NHS. *BJHCM* **19**(11) 540–44

Turner P, Kane R, Jackson C (2014) The efficacy of the enterprise culture in the English NHS. *BJHCM* **20**(3): 109–113

Womack JP (2011) *Gemba Walks*. Lean Enterprises Institute Inc, Cambridge, MA

Yin RK (2014) *Case Study Research: Design and Methods*. 5th edn. Sage, Thousand Oaks, CA

KEY POINTS

- The rigid organisational and managerial framework of the enterprise culture are suggestive of organisational theories
- The complex social and relational phenomena are suggestive of complexity theories
- The research justifies deductive theory, recognising both elements and adopting a dominant quantitative, less dominant qualitative approach to combining methods
- A single-site case study is an appropriate strategy to research this theory and prepare for an intervention

RESEARCH

Evaluation of demand in a rural English hospital emergency department

Paul Turner, Ros Kane, Christine Jackson

ABSTRACT

The purpose of this article is to analyse the patient demand placed on a rural district general hospital (DGH) emergency department within the context of the Purpose, Process, People (PPP) framework used in the private sector. This analysis was undertaken to inform wider evaluation of the implementation of the enterprise culture—the NHS policy to adopt private sector best practice to produce resource use, quality and efficiency improvements. The article concludes with a view that the PPP framework provides methods of calculating the level of discharge necessary to meet the four-hour wait target. Data describing the characteristics and patterns of attending patients can be used to develop an emergency department's processes and people to achieve its time-based target.

Key Words: Emergency care • Health service need • Demand for services

Paul Turner
Senior Lecturer, University of Lincoln

Ros Kane
Principal Lecturer, University of Lincoln

Christine Jackson
Principal Research Fellow, University of Lincoln

Email: Paul.turner@ulh.nhs.uk

The enterprise culture is a term defined by Wall and Owen to describe the implementation of health policy evolution towards encouraging improvements to quality and efficiency in the NHS through adoption of private sector best practice methods. The enterprise culture uses performance measurement as a key motivator and evaluation tool (Wall and Owen, 2003: 113–125).

Womack argues that successful enterprise improvements come from a pathway of clear (quantified) purpose, robust processes and capable, empowered people—the Purpose, Process, People (PPP) framework common to innovative enterprises (2011).

Silvester et al (2004) examine the effects that variations in capacity and demand have on NHS waiting times and their performance targets—such as the four-hour wait target for emergency departments. Typical NHS responses to the process issues which lead to patient waits, Silvester et al argue, is through flawed planning to supply capacity (e.g. staff and beds) to meet patient demand patterns (2004).

The PPP framework responses to manage imbalances between capacity and demand and avoid the formation of queues are more centred on understanding demand characteristics and the productivity of capacity (George, 2003; Silvester et al, 2004). The rationale for this study is to gain an understanding of the case site demand characteristics and the potential for adoption into the PPP framework. A future articl ewill address the capacity characteristics to evaluate a case site's ability to meet the four-hour wait performance target .

Using data describing patient demand on the case site emergency department, together with

an assessment of the characteristics of enterprise culture found in the emergency department's service, the efficacy of the enterprise culture to meet the central the four-hour wait target in a rural hospital is evaluated.

This article addresses the research question 'what is the nature of the emergency service patients' demand?' The study describes the emergency department attendance characteristics within the context of the importance that private sector best practice places on planning to meet demand (to explore the 'purpose' aspect of PPP).

Methods

A single case site is studied to gain understanding of wider research addressing the efficacy of the enterprise culture present in an emergency department (see: Turner et al, 2015). Quantitative data recording patient attendances are extracted and presented to identify characteristics to be considered within a PPP framework in this study.

The single case site is studied within the wider context of research to test the theory that test if the enterprise culture has provided a framework for performance improvement in a rural district general hospital (DGH). The study is generalisable to the theory and not a sample of the population of rural DGH (Yin, 2014: 21).

The case site selected is a DGH in a predominately rural county in England. Alternative acute care is provided by five surrounding hospitals ranging between 30 and 45 miles around the case site. Ethical approval was granted by committees from the DGH trust, University of Lincoln, and National Research Ethics Service in 2012.

A one-year extract of anonymised data (12 months immediately preceding the qualitative study) detailing all attendances is sourced from the DGH emergency department database—extracted by the trust's information services department.

Emergency department demand is analysed from the data detailing all patients attending the department and accessing the service. These attendances are recorded as individual data and summarised to understand

'A single case site is studied to gain understanding of wider research addressing the efficacy of the enterprise culture present in an emergency department'

the pressures on the emergency department. Condensing a large amount of information into descriptions of location (centre of the data distribution) and spread (variability of the data) helps the user to consider the data in 'a few intelligible numbers' (Campbell et al, 2007: 28).

Although we are not able to capture long-term trends, the analysis represents the case study population and is validated by clinicians and managers from the emergency department. Validation is achieved using a Delphi group to realise consensus and will be discussed in a future paper. This validation assists the study by mitigating against the risks that Yin describes when using archival evidence: researchers must: 'be careful to ascertain the conditions under which [the evidence] was produced as well as its accuracy' (Yin, 2014: 109).

Selecting the population of all attending patients avoids sample error (Campbell et al, 2007: 81). These data are deemed relevant to investigate the theory in the contemporary case study (Yin, 2014: 109–10) by describing the site in context of the ethnography.

Limitations

These available data are restricted in duration by the lack of access to previous reliable data following system and coding changes at the site .

Emergency department performance within the enterprise culture

Efficiency and effectiveness through the PPP framework are achieved by designing and implementing processes and people skills to meet a clear and accurately specified customer purpose (Turner et al, 2013). Although we argue

that the centralised targets introduced through the enterprise culture are not developed within the PPP 'purpose' context of 'precisely the right value for the customer' (Womack 2005: 6), they do present a performance improvement outcome against which to test this study's theory (to test if the enterprise culture has provided a framework for performance improvement in a rural DGH). The emergency department performance target, developed through the enterprise culture under the Department of Health's first reforming emergency care paper, states that patients should not 'wait more than four hours in an [emergency department] from arrival to admission to a bed in the hospital, transfer elsewhere or discharge. The average length of waiting should fall to 75 minutes'. (Department of Health, 2001).

The rate of discharge to meet performance

Improving time-related delivery through the PPP framework requires an understanding of the demand placed on a service, and the rate at which work is completed. Time taken to deliver work (lead time) can be calculated using Little's Law (George, 2003: 26), where 'work in progress' is the number of items waiting to be completed and the 'completion rate' is the number of items that can be completed in a specified time frame.

$$\textit{Lead time} = \frac{\textit{Amount of work in progress}}{\textit{Average completion rate}}$$

Within an emergency department, this formula would read:

$$\textit{Time in emergency department} = \frac{\textit{Patients in department}}{\textit{Average discharge rate}}$$

To improve performance in time spent in the emergency department, two options are available: decrease the patients in the department or increase the rate of discharge. Understanding demand is necessary to intervene on both of these options—either through diversion of patients, or improving process or people to increase the completion rate for patient cohorts.

Results of case site analysis

Annual patterns

48 919 patients attended the department over the year. The daily attendance figures, in chronological order from 1 April 2011 (data point 1), are shown in *Figure 1*.

These data show no clear evidence of trend or seasonal patterns. Daily attendances are accepted as normally distributed in the year ($p = 0.2$ in both Kolmogorov-Smirnov and Shapiro-Wilk tests for normality) around a daily mean of 133 patients with a standard deviation of 13.6 patients.

Detailed attendance patterns

However, analysis of a shorter timeframe shows greater levels of variation. *Figure 2* shows the 95% confidence interval for mean hourly attendances by weekday.

Takt-time concept to indicate productivity

Adjustments in the service provision across the day-by-hour period, to synchronise the rate of discharge to the demand for service, are necessary to avoid build-up of patients in department (Womack and Jones, 1996: 55–56). The PPP response to this concept is the 'takt-time' technique. Takt-time is the average elapsed time between patient discharges—and movement between each treatment step while in department (Womack and Jones, 1996: 55). It is calculated that by taking the time available in a work period and then dividing this by the number of patient attendances. As 'takt-times change when customer demand changes' (Miltenburg, 2007: 356), when calculated, takt-time by hour over the week can become a local departmental indicator against performance and investigate improvement potential can be measured.

However, the emergency department has two work-streams which split patient demand: major work-streams (including resuscitation)—higher acuity patients who are likely to be admitted—and a minor work-stream. The emergency department definition of patients presenting to the major stream are all arrivals through emergency services and any other patients

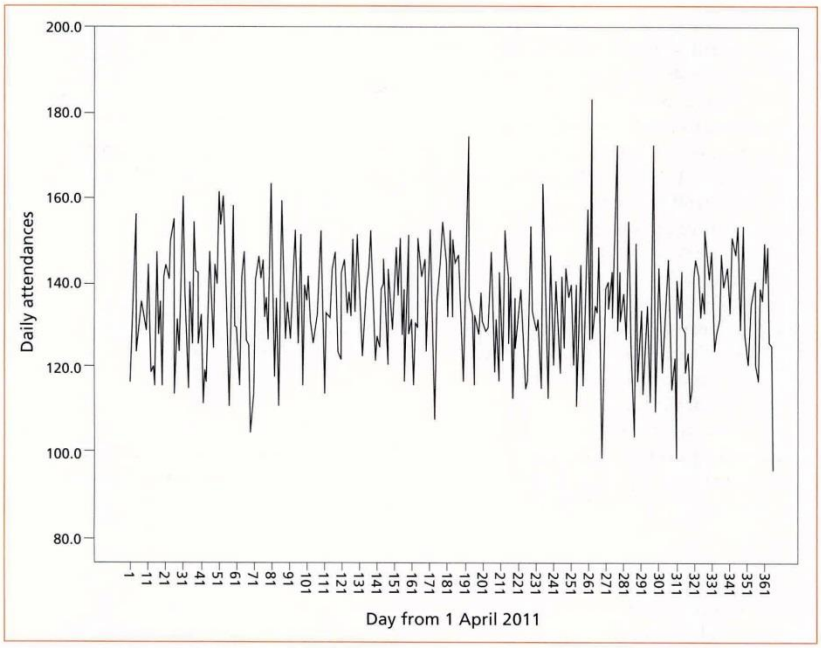


Figure 1. Daily attendances

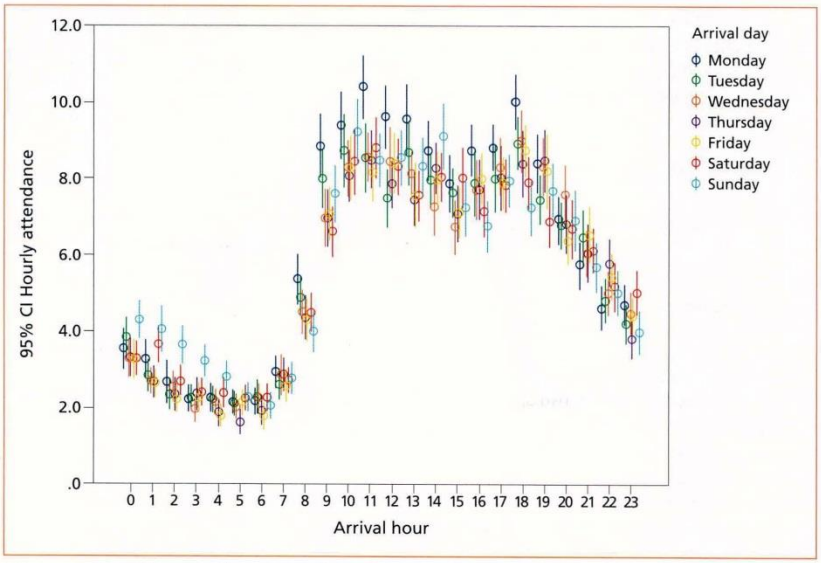


Figure 2. Hourly attendances by day of week (all patients)

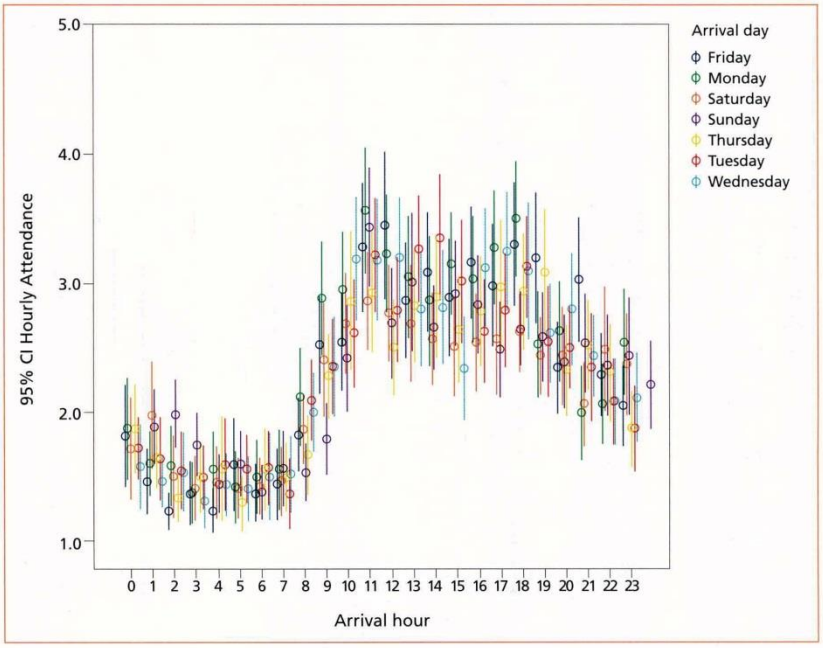


Figure 3a. Hourly attendances by day of week (patients admitted or died in department)

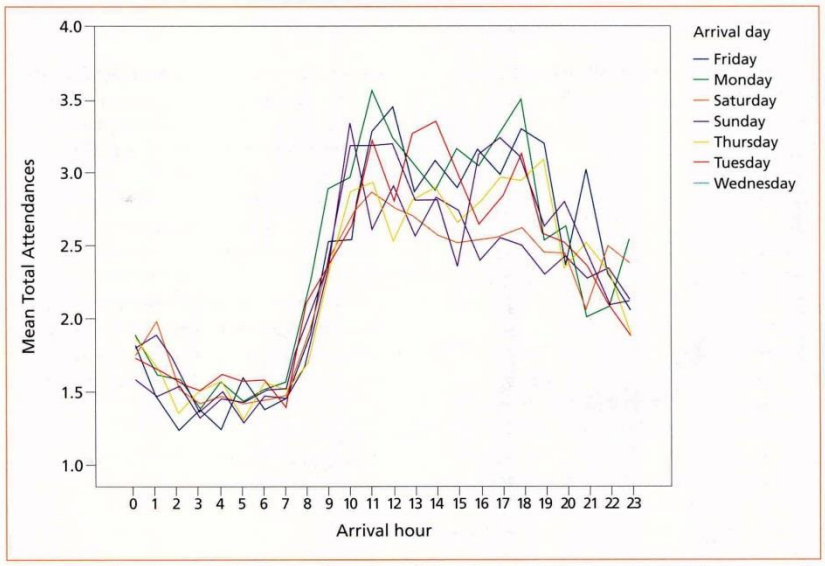


Figure 3b. Hourly attendances by day of week (patients admitted or died in department)

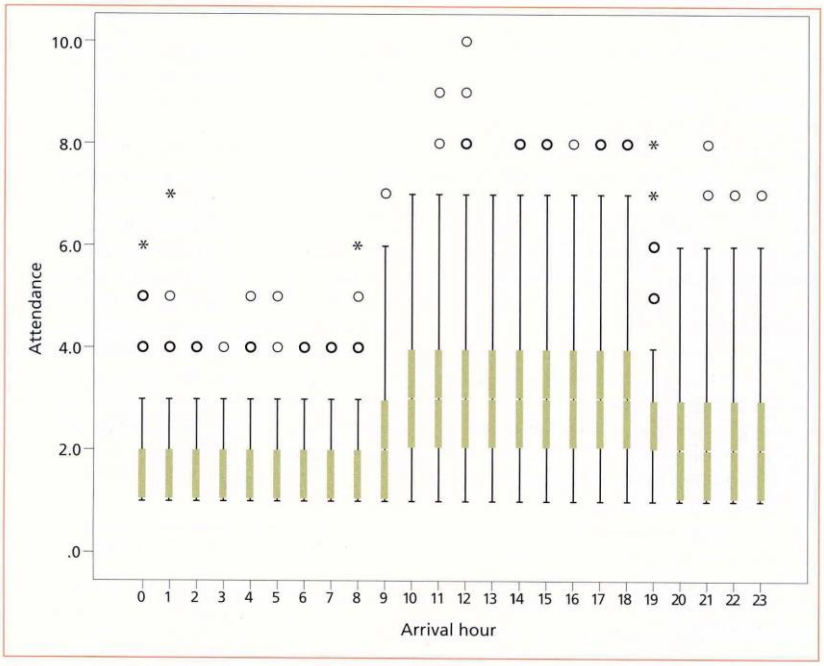


Figure 4. Hourly attendance (patients admitted or died in department)

assessed as such at triage. All other patients are classed as minor. The data extract does not allow analysis using the emergency department's definition of the stream patients were treated in as no such data category is available. However, an analysis of patients admitted as a hospital inpatient or who died in the department is shown in *Figure 3* to offer a comparison (these patients are deemed 'major' by the information services department who provided the data).

Figure 3 shows that attendances by week day and hour-of-day follow similar patterns, although a chi-square test comparing the frequency of attendances rejects the hypothesis that the observed number of patients attending by day and hour is consistent with the expected attendances by day and hour ($p = 0.001$). However, the hourly pattern is consistent between days, and range of difference between hourly attendances on different days is a not more than patient per hour . This analysis can be used as a starting point for calculating the takt-time for a 'baseline' day (or days) for patients demanding higher levels of care if greater understanding of the true extent of patient using each workstream was available.

Although there is variation between weekdays, the largest source of uncertainty from the data is the width of the confidence intervals around the mean. When grouped by arrival hour, all test for normality are rejected ($p = 0.00$ in both Kolmogorov-Smirnov and Shapiro-Wilk tests for normality for all hours) and each hour fits an exponential distribution. To describe the range

'A constant view of patient arrival is necessary to ensure Miltenburg's flexible takt-times so that discharge productivity can be adjusted when demand varies significantly'

of data around the median, a boxplot is used in *Figure 4*.

Although the inter-quartile ranges (vertical oblong boxes) and median (horizontal black line within the inter-quartile range) have a relatively small extent, the data outside this area (particularly the extent over the 75th percentile) extend significantly further. Statistical outliers (marked o or *) also show a variation in the attendance outside of the central tendency.

Discussion

Through the PPP framework, the amount of time patients wait in an emergency department can be calculated using Little's Law. This would require a dynamic view of the number of patients in the department and an appropriate rate of discharges. To ensure that discharge is synchronised to demand patterns, takt-time could be calculated to quantify the productivity needed from the department's processes and people. Such evidence could lead to the production of departmental indicators, which highlight the need for immediate intervention if a problem occurs.

The purpose of analysis through Little's Law and takt-time is to provide an initial profile for matching demand with discharge performance to meet the central target. The range of arrival data and variation described in the case site may present difficulties in planning resources to meet productivity, but knowledge of this level of variation is critical to inform baseline processes and staff planning to provide a flexible service. A constant view of patient arrival is necessary to ensure Miltenburg's flexible takt-times (2007:3556) so that discharge productivity can be adjusted when demand varies significantly (or indeed case-mix deviates from expectation —a level of analysis not possible from this case site data). Their purpose is to provide a clear indication of the rate of productivity to be achieved if the target is to be met and this is an indicator for immediate local action.

This article has shown, through a case study of a rural DGH, a PPP response to the purpose value assigned to an emergency department in a rural DGH emergency care system under the enterprise culture. Although a PPP response to the four-hour wait target cannot be fully calculated from the source data, a framework to achieve the purpose can be planned at a local level.

The next article in this series will review the methods used by the case site emergency department to meet demand and compare to the PPP framework approach in this paper. The article will also discuss the way in which the enterprise culture has provided capacity to meet demand through analysis of pathways and controls and the emergency department resources available. This will be researched using an ethnographic study with validation of the research findings and evaluation of the empirical evidence gathered (the process and people aspect of PPP). BJHCM

References

Campbell MJ, Machin D, Walters SJ (2007) *Medical Statistics: a Textbook for the Health Sciences*. 4th edn. Wiley, Chichester

Department of Health (2001) Reforming Emergency Care: first steps to a new approach. Available at: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4058836.pdf (accessed 28 May 2015)

George ML (2003) *Lean Six Sigma for Service: How to Use Lean Speed and Six Sigma Quality to Improve Services and Transactions*. McGraw-Hill Education

Miltenburg J (2007) Level schedules for mixed-model JIT production lines: Characteristics of the largest instances that can be solved optimally. *International Journal of Production Research* **45**(16) 3555–577

Silvester K, Lendon R, Bevan H, Steyn R, Walley P (2004) Reducing waiting times in the NHS: Is lack of capacity the problem? *Clinician in Management* **12**(3) 105–9

Turner P, Kane R, Jackson C (2013) Enterprise efficiency framework: The english NHS. *BJHCM* **19**(11): 540–44

Turner P, Kane R, Jackson C (2015) Combining methods to research an emergency department: A case study. *BJHCM* **21**(2): 81–5

Wall A, Owen BG (2003) *Health Policy*. 2nd edn. Routledge. New York, NY

Womack JP (2005) *Going Lean in Health Care. Institute for Healthcare Improvement*. Cambridge, MA.

Womack JP (2011) *Gemba Walks*. Lean Enterprises Institute Inc, Cambridge, MA

Womack JP, Jones DT (1996) *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*. Simon & Schuster, London

Yin RK (2014) *Case Study Research: Design and Methods*. 5th edn. Sage, Thousand Oaks, CA

RESEARCH

Ensuring capacity meets demand: A case study

Paul Turner, Ros Kane, Christine Jackson

ABSTRACT

The purpose of this article is to analyse and understand the capacity of a district general hospital to meet its demand for emergency care and achieve the four-hour wait performance target: to ensure that patients should not 'wait more than four hours in an [Emergency Department] from arrival to admission to a bed in the hospital, transfer elsewhere or discharge' (Department of Health, 2001). The research adopts a mixed methods case study design. Quantitative data from staff rotas, and resource availability and qualitative data from an ethnographic study are combined to evaluate the effect capacity provided has on performance. The article concludes that the framework adopted by the case site provides insufficient capacity planning to meet patient demand and has contributed to performance levels below target expectation. Departmental and managerial barriers obstruct timely movement of patients and this frequently leads to reactionary activities to meet performance targets.

Key Words: Emergency service • Hospital • Hospital bed capacity • Health services needs

Paul Turner
Senior Lecturer, University of Lincoln

Ros Kane
Principal Lecturer, University of Lincoln

Christine Jackson
Principal Research Fellow, University of Lincoln

Email: Paul.turner@ulh.nhs.uk

This article is the sixth in a series recording the study undertaken by the principal author. The first four articles examine the policy to adopt private sector methods (the enterprise culture) to make efficiency improvements in the English NHS (Wall and Owen, 2003: 113–25) and conclude to justify a deductive theory to test the complex social structures and organisational framework that have evolved (Turner et al, 2014).

In the fifth article, an analysis of emergency department attendances is undertaken to address the first research question (what is the nature of the emergency service users' demand?) and to put this in context of private sector's purpose, process, people (PPP) framework, which generates private sector success by defining and providing clear purpose, robust processes and capable, empowered people (Womack, 2011). The article concludes that the demand data available at a summary level show established daily and seasonal patterns (Turner et al., 2015b). Despite some significant hourly variation within these patterns, the PPP framework does provide a set of tools to meet demand to attain the four-hour wait target consistent with PPP framework techniques (Womack and Jones, 1996; George, 2003; Miltenburg, 2003).

The fifth article focusses on the 'purpose' element of the PPP framework, whereas the current paper addresses the 'process' and 'people' aspects to address the second research question: what characteristics of the enterprise Culture exist in the emergency department and what are their effects on performance against the four-hour wait target? This is achieved by reviewing the methods and plans used by the emergency department to meet demand within the required time-frame and compare these with the PPP framework.

Methods

This article largely uses qualitative methods to address interpretive aspects present in the enterprise culture, needed to explain the causal

mechanisms (Wikgren, 2005: 11) that are not clear from the quantitative analysis. The qualitative study was guided by significant findings from quantitative analysis of planned resource capacity and four-hour wait target performance data from the same emergency department.

Detailed ethnographic observation has advantages over measurement scales, interviews and questionnaires which do not 'capture the subjectivity of human beings' (Bowling, 2009: 380). This research adopts the advantages of ethnographic observation which produce the most valid data on social behaviour (Green and Thorogood, 2004:133).

The ethnographic study uses overt participant and structured observation. This level of study enables understanding of the complexity and tacit knowledge of an emergency department and the needs of its system of work and the cultural group enacting it (Gerrish and Lacey, 2010). A structured approach to observation was selected because an unstructured approach can result in extensive notes and may 'lose the richness' (Bowling, 2009: 395) needed to assess the use of indicators within the emergency department system.

Planned resource data

Staff rotas, bed and resource capacity, and emergency department work protocols were reviewed on 1 April 2012. Staff rotas in the emergency department provide capacity to meet demand profiles. *Figure 1* shows the staff rota by clinical role and the average patient demand profile over the day. This graph shows only the establishment of staff planned to be on shift, however, actual staff presence against this plan was reviewed during the ethnographic study. The staff rota profile does increase to meet demand throughout the day. Although there seems a disproportionate capacity in the early hours of the day (12 am–8 am), staff on rota are set to minimum requirements to provide a safe service during these hours and not to match demand patterns.

However, this matching of capacity and demand is of limited significance because it considers demand only in terms of the total number of attending patients and capacity only in terms of staff headcount—providing insufficient evidence to calculate what Silvester et al. call a 'fundamental mismatch between the variation in demand and the variation in capacity' (2004: 106). By matching the productivity of staff on rota to the total number of patients in the department at hourly intervals (which differ from the attendance pattern because the patients' time spent in the department varies), the pressure on capacity to achieve the number of discharges required to meet the target is exposed more clearly (Womack and Jones, 1996: 55-56). Archival data were not available to match patient and staff numbers on an hourly basis so these were observed in the ethnographic study.

The emergency department in this case study contains 22 spaces in which to perform an individual patient consultation. Although these spaces are designed to meet a specific clinical purpose, for example resuscitation bays, a meaningful comparison of space capacity against attending patient demand requires data showing the total number of patients who required a clinical space at a set time.

Additionally, 261 beds are available within the wider hospital for admitted emergency patients, although hospital policy states a maximum bed occupancy of 95%, which reduces capacity to 247. Examination of limited bed occupancy data however, revealed that the beds were regularly occupied over this level. Furthermore, the emergency department had an attendance to admission conversion of 33.5% compared to an English mean of 24.1% (Department of Health, 2011).

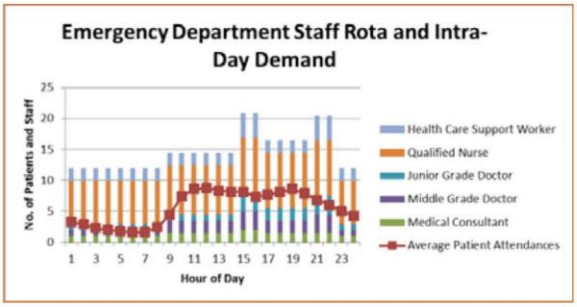


Figure 1. Emergency department staff capacity; intraday patient demand

Finally, the emergency department is subject to a number of policies and procedures, most notably the urgent care standards (UCS), laid out in the emergency department's staff handbook (SH). These locally defined standards are:

- Triage within 15 minutes
- Review within 1 hour by junior or middle grade doctor
- Discuss plan with senior doctor within 2 hours
- Bed request or referral by 3 hours.

Adherence to these standards was observed in the ethnographic study.

Performance data

An analysis of performance data was conducted to identify areas where our critical realist approach could 'reveal possible underlying causes and relations' (Wikgren, 2005: 11) though qualitative methods. Performance was measured using the enterprise culture's purpose-based four-hour wait target (Department of Health, 2001). These data were analysed to show the distribution and variation of time patients spend the emergency department.

Figure 2 describes the overall distribution of patients' time spent in the emergency department and *Figure 3*, how these variations apply to hour of arrival.

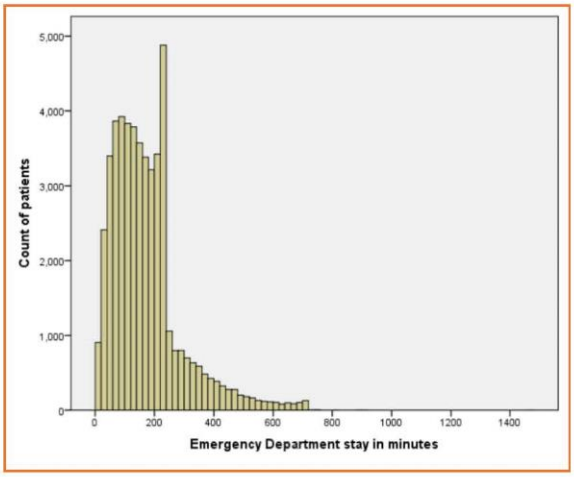


Figure 2. Time spent by patients in department

Figure 2 shows that patients' time spent in emergency department was widely distributed (unseen on the *Figure 2* are individual data points where patient have longer stays up to 1462 minutes). The data show characteristics typical of patient waiting time variables: a skewed distribution, constrained because the stay in minutes cannot fall below zero (Campbell et al, 2007: 38). The median tendency (180 minutes) is followed by a more gradual decent to a long tail, as the more acutely ill patients are treated. However, an unusual addition is the spike of patients staying 240 minutes which coincides with the four-hour target. No data are available to identify any cohorts of patients who may be tested to explain this distribution, such as case mix and acuity of patients' condition and this is observed in the ethnographic study.

Figure 3 shows that the distribution of the patients' time spent in the emergency department does not greatly vary depending on the hour arrival.

Ethnography

The ethnographic study, was conducted over a 12-week period from 1 April 2012 to consider the concerns identified in the quantitative analysis and applicable to the process and people elements of the PPP framework. It produced the following key findings.

Process

Summarised data were available to staff and managers showing the number of patients and their time spent in the emergency department via a continuously updated computer system. However, no method of detailed planning for a patients' progress in accordance with the UCS, and no monitoring of actual performance against it were observed: issues when enacting the process cannot be tracked or resolved by the empowered people Womack et al (2007) argue for. The summary data were primarily observed to be used by managers as a means to control performance. First, to inform an operations centre which was intended to create and monitor bed availability for patient admission—again moving control away from Womack et al's empowered people (2007) in the PPP

framework. Second, to inform a (supernumerary) co-ordinating nurse whose role is to remove blockages in patient flow through the emergency department.

Reactions to the controls from the operations centre, for example to intervene with the emergency department workload to avoid a breach of the four-hour wait target, were common and a key contributor to the spike of patients who stay just under 240 minutes. These reactions represent another deviation from the coaching and mentoring aspect of a management role within the PPP framework (Shook, 2008).

These interventions were frequently due to a lack of bed availability for admitted patients resulting from an imbalance between the time most in-patients are discharged and the demand for their empty beds. *Figure 4* shows the imbalance between percentage of patients admitted per hour and those discharged on ethnographic study days. This imbalance produced a build-up of patients waiting to be admitted (absorbing capacity resources through occupation of emergency department clinical space and additional nurse observations), and admissions to inappropriate wards to meet the patients' care and delays for newly attending patients. These variations agree with Silvester et al's observations of a mismatch between variations in capacity and demand which they state 'is the most common reason for a queue in healthcare organisations (2004:106).

Admission decisions are also common in the fourth hour of a patient's stay. Delays and inconsistent practices from referrals by emergency department doctors to other specialties (specialist having their own capacity issues and separate targets) contribute to many breaches of the four-hour target or late admissions. It is not clear from the research however how much this is caused by either:

- A mismatch between capacity and demand (Silvester et al, 2004)
- A lack of empowered and competent people (Womack et al, 2007).

Although no evidence is available to show the association of the high conversion rate with decisions to admit a patient to avoid a breach of the four-hour wait target, no analysis of higher than expected levels of acuity for the attending patients is available either. Pressure to meet the target is clear, however, the finding from the observations is that the data and controls were used to prevent breaches of the four-hour target, not to maintain the UCS.

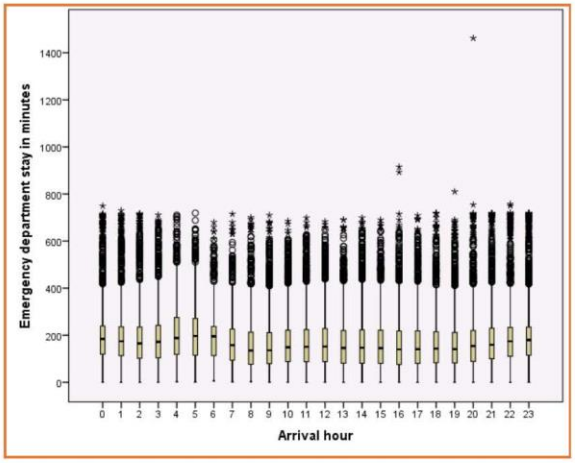


Figure 3. Distribution of time spent in department by hour of arrival

People

The analysis of capacity revealed that staff are usually present in the department in accordance with the planned rota. However, three principal concerns emerged which affect the provision of empowered people (Womack et al, 2007):

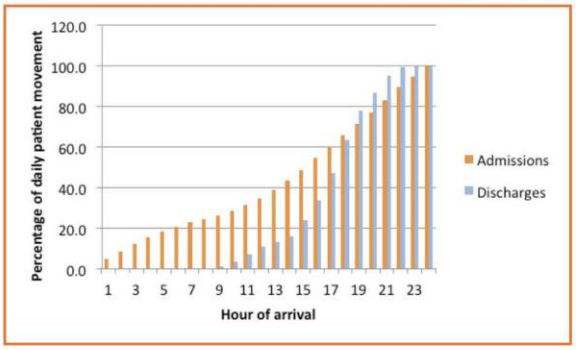


Figure 4. Profile of medical admissions to discharges

- Staff numbers frequently contained a significant amount of bank or agency staff who do not know the department, system and controls
- Qualified nursing time was often spent away from the department escorting patients or performing other non-clinical activities when healthcare assistants were not available
- Relationships and separate targets between departments and individuals make a greater impact on patient flow than process and protocol (an emergency department patient is often seen as an emergency department problem unless a good relationship between departments exists).

The functional lines of control (management and clinical specialism) discussed in the process section and the ineffectual people relationships that result from them represent a major difference between PPP and the enterprise culture.

Conclusions

The enterprise culture has been implemented in an emergency department, which is managed and evaluated separately from the whole emergency care system. Insufficient planning which matches Silvester et al's. capacity and productivity (through Womack et al's. competent and empowered people) to demand is apparent. This results in fragmented intelligence about safe patient flow within the system and difficulty in understanding where patients should be at what time to receive the best possible care. In summary, the findings of the analysis and ethnography reveal a case site that fails to meet the fundamental PPP framework elements of process and people (Womack et al., 2007).

- Analysis of patient demand and calculation of planned processes and productive resources to meet it do not exist. There is no mechanism to continuously monitor and resolve performance gaps
- The emergency care system is fragmented and often reactionary. Disparate targets, ineffective relationships and a deviation from care standards produce a culture where management intervention is necessary to achieve the purpose.

In the next article, validation of the findings from Delphi studies is undertaken and an intervention to create a performance improvement is recorded to test the hypothesis that the private enterprise framework adopted by the emergency department is successful in achieving the aims of the enterprise culture. BJHCM

KEY POINTS

- Emergency care system capacity is not calculated, planned or monitored to meet demand characteristics.
- Performance of the key four-hour wait is often reactionary and subject to to management intervention without reference to care standards.

References

Bowling A (2009) *Research Methods in Health: Investigating Health and Health Services*. McGraw-Hill International, Maidenhead

Campbell MJ, Machin D, Walters SJ (2007) *Medical Statistics: A Textbook for the Health Sciences*. 4th edn. Wiley, Chichester

Department of Health (2001) Reforming emergency care: first steps to a new approach. Available at: http://tinyurl.com/nuwx94 (accessed 4 September 2015)

Department of Health (2011) Admission through major Accident & Emergency Departments, Quarter 2: July - September 2011. Available at: http://tinyurl.com/6c407m (accessed 4 September 2015)

George ML (2003) *Lean Six Sigma for Service: How to Use Lean Speed and Six Sigma Quality to Improve Services and Transactions*. McGraw-Hill Education, Maidenhead

Gerrish K, Lacey A (2010) *The Research Process in Nursing*. Wiley, Chichester

Green J, Thorogood N (2004) *Qualitative Methods for Health Research*. SAGE Publications, London

Miltenburg J (2007) Level schedules for mixed-model JIT production lines: Characteristics of the largest instances that can be solved optimally. *International Journal of Production Research* **45**(16): 3555–77

Shook J (2008) *Managing to Learn: Using the A3 Management Process to Solve Problems, Gain Agreement, Mentor and Lead. Version 1.1*. Lean Enterprise Institute, Cambridge, MA

Silvester K, Lendon R, Bevan H, Steyn R, Walley P (2004) Reducing waiting times in the NHS: Is lack of capacity the problem? *Clinician in Management* **12**(3) 105–9

Turner P, Kane R, Jackson C (2015) Evaluation of demand in a rural English hospital emergency department. *BJHCM* **21**(6) 282–8

Turner P, Kane R, Jackson C (2014) The efficacy of the enterprise culture in the english NHS. *BJHCM* **20**(3): 109–113

Wall A, Owen BG (2003) *Health Policy*. 2nd edn. Routledge, London

Wikgren M (2005) Critical realism as a philosophy and social theory in information science? *Journal of Documentation* **61**(1) 11–22

Womack J (2011) *Gemba Walks*. Lean Enterprises Inst Inc,

Womack JP, Jones DT (1996) *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*. Simon & Schuster, London

Womack JP, Jones DT, Roos D (2007) *The Machine That Changed the World: The Story of Lean Production--Toyota's Secret Weapon in the Global Car Wars That Is Now Revolutionizing World Industry*. Free Press, New York, NY

Implementing Emergency Department Performance Improvement Through the Enterprise Culture

Implementing performance improvement through the enterprise culture

Paul Turner, Ros Kane, Christine Jackson

ABSTRACT

The purpose of this article is to evaluate performance improvements made through a case study of a rural English hospital's emergency department within the framework of the enterprise culture—the NHS adoption of the private sector's performance improvement best practice. Additionally, the process of the research and the significant barriers encountered are documented to inform future researchers of potential drawbacks when considering this type of research. An intervention addressing local performance issues was defined by medical consultants. A pathway to care for emergency care patients requiring clinical observation for more than four hours—but not admission as a hospital inpatient—was created. The efficacy of the intervention was evaluated by measuring compliance to the pathway standards and conducting an ethnographic study and semi-structured interviews. Structural barriers to research caused by lack of staff availability were encountered. Additionally, although improvement from the intervention was encouraging, the ability of the people within the system to consistently enact the process caused performance issues against expected targets.

Key Words: Emergency department • Innovation • Barriers to research • NHS change

This is the seventh article in a series recording the study undertaken by the principal author. The first four articles examined the development of policy leading to the enterprise culture, which looks to make quality and efficiency improvements in the English NHS (Wall and Owen, 2003: 113–5). The Purpose, Process, People (PPP) framework (Womack, 2011) used in private sector best practice, which underpins the enterprise culture, is also examined.

The fifth and sixth articles tested a deductive theory challenging whether the enterprise culture has provided a framework for performance improvement in a case study at a single emergency department in a rural district general hospital (DGH) (Turner et al, 2014). The fifth article analysed the purpose element of the PPP framework and concludes that the data describing patient demand can be analysed to provide work rates to attain the four-hour wait target using PPP techniques (George, 2003; Miltenburg, 2007). The sixth article addressed the process and people elements to evaluate the capacity characteristics of the enterprise culture within the emergency department and their effects on performance against the four-hour wait target. This article supports Silvester et al's (2004) findings that emergency care capacity

Paul Turner
Senior Lecturer, University of Lincoln

Ros Kane
Principal Lecturer, University of Lincoln

Christine Jackson
Principal Research Fellow, University of Lincoln

Email: Paul.turner@ulh.nhs.uk

is not planned to meet demand characteristics. The article concludes that the four-hour wait target performance is frequently a product of reactionary management intervention and not care standards or processes (Turner et al, 2015c)

This article aims to test the hypothesis that enterprise culture framework present in the emergency department is successful in achieving improvement in line with its quality and efficiency aims.

Methods

To test the hypothesis, an intervention was created by the two substantive medical consultants at the emergency department. To expose the efficacy of the enterprise culture present within the emergency department, the consultants chose an important performance issue within their area of control and designed an intervention to improve it. To support the choice of performance issues, the validated findings of the capacity, demand and performance analysis were presented to the consultants for reference, but they were at liberty to select their own departmental need for improvement.

Validation of the capacity, demand and performance data from participants within the system provides critique of the findings and was chosen because they 'have access to additional knowledge of the context [of the system] ... that is not available to the ethnographer' (Hammersley and Atkinson, 1995: 228). A series of modified Delphi studies were planned to validate the capacity and demand and performance analysis. Participants were asked the extent to which they agreed that that the analyses were an accurate description of operational activities within the emergency department. A nine-point Likert scale and a median score of seven were used to achieve consensus. Findings from the capacity, demand and performance studies are discussed in previous articles (Turner et al, 2015b; 2015c).

Methods to define and evaluate the intervention

The purpose of the intervention was to enable the emergency department to provide a solution to a locally identified problem under the established enterprise culture. The efficacy of the intervention was then evaluated quantitatively and through further ethnographic observation and semi-structured interviews.

To measure the effect of the intervention, sets of patient notes were reviewed by the clinical director. In total, 17 sets of notes from patients following the intervention were randomly selected from the week following implementation of the intervention. The sample size reflected only the time that the clinical director was able to commit and not a number calculated to give precision to a statistical test. As the intervention chosen by the consultants represented a new process, comparative tests against previous performance were not possible. However, the proportion of patients complying with the intervention indicators (when reviewed by the clinical director) was calculated. The confidence level of the sample proportion was calculated to define a range of values in which population performance is likely to lie (Campbell et al, 2007: 89).

The intervention and its target and process were updated in the staff handbook and communicated by disseminated staff briefings and email by the clinical director.

The capacity,demand and performance analysis

An open question Delphi round to 'obtain ideas or attitudes' (Bowling, 2009:437) about capacity, demand and performance influences, was undertaken using online survey software. The research findings and summarised comments from the Delphi round, was then presented to a smaller nominal group to achieve consensus. No new knowledge was added from the open round and validation was achieved by full consensus from the participants. This approach was preferred to several interviews with individuals because groups provide greater 'access to interaction between participants, and thus some insight into how social knowledge is produced' (Green and Thorogood, 2004: 107). It is noted that groups may be open to participants exerting more influence however, given the small number of participants available from the emergency department staff, we considered the benefits of interaction more compelling. Bloor et al suggest that a minimum Delphi group size is

four, however, they argue that a more important factor in the group dynamic is a balance of 'viewpoints, experience and interests' (2015: 66) and the study aimed to achieve this within the restrictions of the limited number of potential participants from a small, rural DGH.

Intervention

Treatment of a cohort of emergency care patients requiring clinical observation for at least 12 hours after attendance was chosen by the consultants to address performance issues through the intervention. Observation patients were defined as those who had presented to, and been assessed and treated in, the emergency department. Although they did not require admission to an acute bed, these patients were kept under observation for a limited time. The treatment of observation patients was chosen because it represented a critical local need which was caused by a gap in clinical control (namely a lack of agreed process) within the emergency department and the clinical decision unit (CDU). Observation and admitted medical patients were transferred to the CDU prior to their discharge or relocation to a specialty ward.

The indicators assigned by the consultants to measure success in the intervention were:

- Whether the observation patient had a care plan agreed and documented by an emergency department doctor or nurse
- Whether a drug chart was complete when the patient was transferred to CDU.

As these indicators were essential elements of clinical care, complete compliance was expected.

From the 17 sets of notes reviewed, 15 patients (a proportion of 0.882) had a clinically appropriate plan and drug chart. However, this infers with 95% confidence that performance fell between 63.5% and 98.5% of the population of patients using the pathway during that week.

Evaluating the intervention

The confidence interval carried risks when drawing conclusions about the efficacy of the intervention, namely: the limitations of the sample size and the possibilities of the results being unrepresentative of long-term performance. This led to a need to triangulate the quantitative analysis of the intervention. Two methods were devised to achieve this—a further period of ethnographic observation and interviews with the participants who registered for the Delphi study. Interviews were selected to allow the researchers use open questions with which to control the line of questioning. This allowed us to focus on the results of the intervention and subsequent additional ethnography and limit the indirect views of the interviewee (Creswell, 2003: 187).

The second ethnographic study revealed that the intervention was not routinely followed—particularly in times of great pressure (from high patient volume or where the acuity of some patients absorbed a lot of clinical time). Of the 14 patients available for study during the scheduled ethnography, only nine had visible compliance (proportion of 0.64). Although all of the failures happened at times when four-hour wait pressures were most intense, four compliances were also noted during this time. Also mechanisms to monitor the indicators and resolve issues when performance was below standard were not evident: although the intervention process and its indicators were described, monitoring actual performance was not undertaken on an ongoing basis. Delayed assessment of performance was observed as common practice in the hospital. Performance against policy was seen to be managed through a periodic audit by the trust's quality department rather than by clinical staff when performance issues were occurring.

However, the interviews showed a general themed belief that the intervention was successful. This belief was based on the involvement of the clinical body who identified the performance gap and created a solution - rather than responding to central or managerial directives. However, no assessment of the low compliance rate was mentioned, which was unsurprising given the lack of mechanisms to monitor the indicators.

Discussion

In evaluating the hypothesis that the enterprise culture framework in the emergency department is successful in achieving quality and efficiency

improvements, the following key aspects of the PPP framework were identified. The intervention and its success criteria addressed local needs, which are identified as desirable factors in the effective use of performance indicators (Turner et al, 2013b). Additionally, the process was well defined and captured the expertise of a wide group of stakeholders who had a clear view of the purpose in their approach to problem solving that Womack et al (2007) consider important, although involvement from participants within the emergency department was limited for the reasons already noted. Furthermore, the effect of clinical managers guiding participants' knowledge to improve performance of a clearly defined purpose demonstrated fundamental principals of PPP framework problem-solving methods (Turner et al, 2013b).

However, sustained and complete compliance was not achieved and other key aspects of PPP were absent. All performance 'is the result of a process' (Womack, 2005: 3), but to achieve success people must enact the process unless a need to resolve an immediate problem occurs (Womack et al, 2007). As the case site relied on agency staff (Turner et al, 2015c), the use of people fully competent in enacting the process was compromised. Training new staff to be competent in local procedures is especially difficult where permanent, experienced staff were engaged in clinical activities to the extent that they were not available for development and training.

As the intervention's indicators were not monitored, or evidenced by the receiving CDU, resolution of performance issues was not possible and failure to comply was only evidenced anecdotally and without closure. Some evidence of the departmental relationship concerns from our ethnographic study (Turner et al, 2015c) remained when studying the efficacy of the intervention and may have also contributed to non-compliance.

The intervention represented a localised issue for emergency care patients, but did not address the key purpose of the enterprise culture: achievement of the four-hour wait targets. Observation patients account an average of 12 out of the daily 133 attendances, but the consultants' choice of intervention was not based on quantified information, rather what felt right clinically and what would make an improved service. An intervention to provide capacity to meet demand and relieve four-hour wait pressures would have relied on resources throughout the emergency care system—not just internally to the emergency department or even the hospital, but involving ambulance providers (acute and patients transport), NHS primary care, commissioning trusts and care homes for example. The limitations of organisational restraints and internal departmental rigidity may have affected the selection.

The limitations from structural barriers to research both in terms of planning the method (potential participants and sample restrictions to evaluate the intervention efficacy), and in the live setting (the lack of availability of participants and the effect of losing a consultant from the study), presented a limitation to the study quality.

Conclusions

Through this intervention we have:

- Identified structural barriers to research in a rural DGH.
- Introduced an intervention in this live setting.
- Conducted research to evaluate the effectiveness of the intervention given the structural barriers.

We believe that our findings are useful to clinicians looking to introduce similar interventions and future researchers in comparable live settings.

Although a process capable of resolving a locally identified performance issue was implemented, problems with availability of competent staff to enact it affected its efficacy. The availability of sufficient experienced staff was also evident in the limitations of applying the protocol and validating the research. Pressure to achieve the four-hour target and inadequate volume of staff who were competent in enacting the process were responsible for the below-expected compliance.

The intervention did not widely test the enterprise culture's ability to achieve quality and efficiency aims, however, the effects from the failure to follow the PPP framework in such a

study presents a concern. Insufficient evidence was found to support the hypothesis that the enterprise culture in the case study emergency department was successful in achieving quality and efficiency improvements. BJHCM

References

Bloor M, Sampson H, Baker S, Dahlgren K (2015) Useful but no oracle: Reflections on the use of a delphi group in a multi-methods policy research study. *Qualitative Research* **15**(1): 57–70. doi: 10.1177/1468794113504103

Bowling A (2009) *Research Methods in Health: Investigating Health and Health Services*. McGraw-Hill International, Maidenhead

Campbell MJ, Machin D, Walters SJ (2007) *Medical Statistics: A Textbook for the Health Sciences*. 4th edn, Wiley, Chichester

Creswell JW (2014) *Reseach Design: Qualitative, Quantitative and Mixed Methods Approaches*. 4th edn, SAGE, Thousand Oaks, CA

George ML (2003) *Lean Six Sigma for Service: How to Use Lean Speed and Six Sigma Quality to Improve Services and Transactions*. McGraw-Hill Education, New York, NY

Green J, Thorogood N (2004) *Qualitative Methods for Health Research*. Sage, Thousand Oaks, CA

Hammersley M, Atkinson P (1995) *Ethnography: Principles in Practice*. 2nd edn. Routledge, London

Miltenburg J (2007) Level schedules for mixed-model JIT production lines: Characteristics of the largest instances that can be solved optimally. *International Journal of Production Research* **45**(16): 3555–77. doi: 10.1080/00207540701223394

Silvester K, Lendon R, Bevan H, Steyn R, Walley P (2004) Reducing waiting times in the NHS: Is lack of capacity the problem? *Clinician in Management* **12**(3): 105–9

Turner P, Kane R, Jackson C (2013b) Enterprise efficiency framework: The english NHS. *British Journal of Healthcare Management* **19**(11): 540–44

Turner P, Kane R, Jackson C (2014) The efficacy of the enterprise culture in the english NHS. *British Journal of Healthcare Management* **20**(3): 109–13

Turner P, Kane R, Jackson C (2015b) Evaluation of demand in a rural english hospital emergency department. *British Journal of Healthcare Management* **21**(6): 282–8.

Turner P, Kane R, Jackson C (2015c) Ensuring capacity meets demand: A case study. *British Journal of Healthcare Management* **21**(9): 428

Wall A, Owen BG (2003) Health policy. 2nd edn. Routledge, New York, NY

Womack JP (2005) *Going Lean in Health Care*. Institute for Healthcare Improvement, Cambridge, MA

Womack JP (2011) *Gemba Walks*. Lean Enterprises Institute, Cambridge, MA

Womack JP, Jones DT, Roos D (2007) *The Machine That Changed the World: The Story of Lean Production—Toyota's Secret Weapon in the Global Car Wars That Is Now Revolutionizing World Industry*. Free Press, New York, NY

References

Abo-Hamad, W. and Arisha, A. (2012) Simulation-based framework to improve patient experience in an emergency department. *European Journal of Operational Research,* 224(1) 154-166.

Adab, P., Rouse, A.M., Mohammed, A.M. and Marshall, T. (2002) Performance league tables: The NHS deserves better. *Bmj,* 324(7329) 95-98. Available from http://www.bmj.com/content/324/7329/95.

Alberti, G.,Professor Sir (2004) [online]. Available from http://aace.org.uk/wp-content/uploads/2011/11/Transforming-Emergency-Care-in-England.pdf.

Alberti, G.,Professor Sir (2007) *Emergency care ten years on: reforming emergency care.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_074239 [Accessed 10/11/2010].

Allder, S., Silvester, K. and Walley, P. (2010) Managing capacity and demand across the patient journey. *Clinical Medicine,* 10(1) 13-15.

Anderson, R.A., Crabtree, B.F., Steele, D.J. and McDaniel, R.R.,Jr (2005) Case study research: The view from complexity science. *Qualitative Health Research,* 15(5) 669-685.

Baggott, R. (2000) *Public health : policy and politics.* Basingstoke: Macmillan.

Baggott, R. (2007) *Understanding health policy.* Bristol: Policy Press.

Bazeley, P. and Jackson, K. (2007) *Qualitative data analysis with NVivo.* 1st edition. London: Sage Publications Limited.

Beattie, E. and Mackway-Jones, K. (2004) A delphi study to identify performance indicators for emergency medicine. *Emergency Medicine Journal,* 21(1) 47-50.

Bevan, G. and Hood, C. (2006a) Have targets improved performance in the english NHS? *BMJ (Clinical Research Ed.),* 332(7538) 419-422.

Bevan, G. and Hood, C. (2006b) What's measured is what matters: Targets and gaming in the english public health care system. *Public Administration,* 84(3) 517-538.

Bevan, G. and Robinson, R. (2005) The interplay between economic and political logics: Path dependency in health care in england. *Journal of Health Politics, Policy & Law,* 30(1) 53-78.

Blackman, T., Elliott, E., Greene, A., Harrington, B., Hunter, D., Marks, L., McKee, L., Smith, K. and Williams, G. (2009) Tackling health inequalities in post-devolution britain: Do targets matter? *Public Administration,* 87(4) 762-778.

Bloor, M., Sampson, H., Baker, S. and Dahlgren, K. (2015) Useful but no oracle: Reflections on the use of a delphi group in a multi-methods policy research study. *Qualitative Research,* 15(1) 57-70.

Blunt, I., Bardsley, M. and Dixon, J. (2010) *Trends in Emergency Admissions in Englans: 2004 - 2009.* [online]. Available from http://www.nuffieldtrust.org.uk/sites/files/nuffield/Trends_in_emergency_admissions_REPORT.pdf.

Boland, A., Cherry, G. and Dickson, R. (eds.) (2014) *Doing a Systematic Review: a student's guide.* 1st edition. London: Sage.

Booth, A., Papaioannou, D. and Sutton, A. (2012) *Systematic approaches to a successful literature review.* Sage.

Bowling, A. (2009) *Research methods in health: investigating health and health services.* McGraw-Hill International.

Boyle, A.A., Robinson, S.M., Whitwell, D., Myers, S., Bennett, T., Hall, N., Haydock, S., Fritz, Z. and Atkinson, P. (2008) Integrated hospital emergency care improves efficiency. *Emergency Medicine Journal,* 25(2) 78-82.

Brailsford, S.C., Lattimer, V., Tarnaras, P. and Turnbull, J. (2004) Emergency and on-demand health care: Modelling a large complex system. *Journal of the Operational Research Society,* 55(1) 34-42.

Brailsford, S. and Hilton, N. (2001) A comparison of discrete event simulation and system dynamics for modelling health care systems.

British Medical Association (2005) *BMA survey of A&E waiting times.* [online] British Medical Association. Available from http://www.bma.org.uk/healthcare_policy/emergency_medicine/AESurveyReport310106.jsp [Accessed 10/11/2010].

Byrne, D. and Callaghan, G. (2014) *Complexity Theory and the Social Sciences: the state of the art.* 1st edition. Routledge.

Cameron, P.A., Schull, M.J. and Cooke, M.W. (2011) A framework for measuring quality in the emergency department. *Emergency Medicine Journal,* 28(9) 735-740.

Campbell, M.J., Machin, D. and Walters, S.J. (2007) *Medical statistics: a textbook for the health sciences.* Fourth edition. Wiley. com.

Chartered Quality Institute (2013) [online] Chartered Quality Institute. Available from http://www.thecqi.org/Knowledge-Hub/Resources/The-Quality-Survival-Guide/Surviving-processes/ [Accessed September 2013].

Clover, B. (2013) [online] Health Service Journal;. Available from http://www.hsj.co.uk/news/acute-care/exclusive-ae-performance-plummets-as-majority-of-trusts-miss-target/5058128.article.

College of Emergency Medicine (2008) *The Way Ahead 2008-2012.* [online] College of Emergency Medicine. Available from http://www.collemergencymed.ac.uk/asp/document.asp?ID=4474 [Accessed 10/11/2010].

Connelly, L.G. and Bair, A.E. (2004) Discrete event simulation of emergency department activity: A platform for system-level operations research. *Academic Emergency Medicine,* 11(11) 1177-1185.

Cooke, M.W., Wilson, S., Halsall, J. and Roalfe, A. (2004) Total time in english accident and emergency departments is related to bed occupancy. *Emergency Medicine Journal,* 21(5) 575-576.

Creswell, J.W. (2014) *Reseach Design: qualitative, quantitative and mixed methods approaches.* Fourth edition. Sage.

Creswell, J.W. and Clark, V.L.P. (2011) *Designing and conducting mixed methods research.* 2nd edition. Sage.

Creswell, J.W. (1994) *Research design: qualitative & quantitative approaches.* Sage Publications.

Cronin, C. (2014) *Using case study research as a rigorous form of inquiry.* RCN Publishing Company. 05, 19-27.

Crotty, M. (1998) *The Foundations of Social Research: Meaning and Perspective in the Research Process.* SAGE Publications.

Damiani, M., Propper, C. and Dixon, J. (2005) Mapping choice in the NHS: Cross sectional study of routinely collected data. *BMJ: British Medical Journal (International Edition),* 330(7486) 284-287.

Davies, H.T. and Lampel, J. (1998) Trust in performance indicators? *Quality in Health Care,* 7(3) 159-162.

DeForge, R. and Shaw, J. (2012) Back- and fore-grounding ontology: Exploring the linkages between critical realism, pragmatism, and methodologies in health & rehabilitation sciences. *Nursing Inquiry,* 19(1) 83-95.

Department of Health (2000) *The NHS Plan: a plan for investment, a plan for reform.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4002960 [Accessed 08/11/2010].

Department of Health (2001) *Reforming emergency care: first steps to a new approach.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4008702 [Accessed 10/11/2010].

Department of Health (2003) *Clinical exceptions to the four hour emergency care target.* [online] Crown. Available from

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4091871 [Accessed 10/11/2010].

Department of Health (2004) *The NHS Improvement Plan : Putting people at the heart of public services.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4084476 [Accessed 26th May 2011].

Department of Health (2010 a) *Equity and Excellence: Liberating the NHS.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_117353.

Department of Health (2010 b) *A&E Clinical Quality Indicators.* [online] Crown. Available from http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_123055.pdf.

Department of Health (2011 a) *Liberating the NHS: Legislative framework and next steps.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_122661 [Accessed 27/05/2011].

Department of Health (2011 b) *Admission through major Accident & Emergency Departments, Quarter 2: July - September 2011.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Performancedataandstatistics/AccidentandEmergency/DH_077485 [Accessed 30/08/12].

Department of Health (2013) *Integrated Care and Support: our shared commitment.* [online]. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/287815/DEFINITIVE_FINAL_VERSION_Integrated_Care_and_Support_-_Our_Shared_Commitment_2013-05-13.pdf.

Department of Health (2016) *NHS Topics.* [online] Crown. Available from https://www.gov.ok/government/topics/national-health-service [Accessed April 2016].

Donabedian, A. (1966) Evaluating the quality of medical care. *The Milbank Memorial Fund Quarterly,* 44(3) 166-206.

Donabedian, A. (1986) Criteria and standards for quality assessment and monitoring. *QRB Qual Rev Bull,* 12(3) 99-108.

Donabedian, A. (1981) Criteria, norms and standards of quality: What do they mean? *American Journal of Public Health,* 71(4) 409-412.

Downing, A. and Wilson, R. (2002) Temporal and demographic variations in attendance at accident and emergency departments. *Emergency Medicine Journal,* 19(6) 531-535.

Frankel, A.S., Leonard, M.W. and Denham, C.R. (2006) Fair and just culture, team behavior, and leadership engagement: The tools to achieve high reliability. *Health Services Research,* 41(4p2) 1690-1709.

Freeman, T. (2002) Using performance indicators to improve health care quality in the public sector: A review of the literature. *Health Services Management Research,* 15(2).

Fung, C.H., Yee-Wei Lim, Mattke, S., Damberg, C. and Shekelle, P.G. (2008) Systematic review: The evidence that publishing patient care performance data improves quality of care. *Annals of Internal Medicine,* 148(2) 111-W23.

George, M.L. (2003) *Lean Six Sigma for Service: How to Use Lean Speed and Six Sigma Quality to Improve Services and Transactions.* McGraw-Hill Education.

Gerrish, K. and Lacey, A. (2010) *The research process in nursing.* John Wiley & Sons.

Gillham, B. (2000) *Case study research methods.* Continuum.

Giuffrida, A., Gravelle, H. and Roland, M. (1999) Measuring quality of care with routine data: Avoiding confusion between performance indicators and health outcomes. *Bmj,* 319(7202) 94-98. Available from http://www.bmj.com/content/319/7202/94.

Goddard, M., Mannion, R. and Smith, P.C. (1999) Assessing the performance of NHS hospital trusts: The role of 'hard' and 'soft' information. *Health Policy,* 48(2) 119-134.

Green, J.,Thorogood,N. (2004) *Qualitative Methods for Health Research.* SAGE Publications.

Greer, S.L. (2004) *Territorial politics and health policy: UK health policy in comparative perspective.* Manchester University Press.

Hagel, S., Reischke, J., Kesselmeier, M., Winning, J., Gastmeier, P., Brunkhorst, F.M., Scherag, A. and Pletz, M.W. (2015) Quantifying the hawthorne effect in hand hygiene compliance through comparing direct observation with automated hand hygiene monitoring. *Infection Control & Hospital Epidemiology,* 36(8) 957-962 6p.

Hammersley, M. and Atkinson, P. (1995) *Ethnography: Principles in Practice.* 2nd edition. London: Routledge.

Hart, J.T. (2010) *The Political Economy of Health Care: Where the NHS Came from and where it Could Lead.* Policy Press.

Hoerl, R.W. and Snee, R. (2010) Statistical thinking and methods in quality improvement: A look to the future. *Quality Engineering,* 22(3) 119-129.

House of Commons Committee of Public Accounts (2005) *Department of Health: improving emergency care in England.* [online] London: The Stationery Office Limited. Available from http://www.publications.parliament.uk/pa/cm200405/cmselect/cmpubacc/445/445.pdf [Accessed 10/11/2010].

HSCIC (2013) [online] Crown. Available from http://www.hscic.gov.uk/searchcatalogue?productid=11540&returnid=1684.

Hunter, D.J. (2003) *Public health policy.* Cambridge: Polity Press.

Jesson, J., Matheson, L. and Lacey, F.M. (2011) *Doing your literature review: traditional and systematic techniques.* Sage.

Jones, L., Exworthy, M. and Frosini, F. (2013) Implementing market-based reforms in the english NHS: Bureaucratic coping strategies and social embeddedness. *Health Policy,* 111(1) 52-59.

Kaplan, B. and Duchon, D. (1988) Combining qualitative and quantitative methods in information systems research: A case study. *MIS Quarterly,* 12(4) 571-586.

Kazandjian, V.A., Matthes, N. and Wicker, K.G. (2003) Are performance indicators generic? the international experience of the quality indicator project. *Journal of Evaluation in Clinical Practice,* 9(2) 265-276.

Kelman, S. and Friedman, J.N. (2009) Performance improvement and performance dysfunction: An empirical examination of distortionary impacts of the emergency room wait-time target in the english national health service. *Journal of Public Administration Research and Theory,* 19(4) 917-946.

Lammy, D. (2003) Reforming emergency care; for patients. *Emergency Medicine Journal,* 20(2) 112-112.

Lansley, A. (2010) *Abolition of the four-hour waiting standard in Accident and Emergency.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Dearcolleagueletters/DH_116918 [Accessed 10/11/2010].

Learmonth, M. (1997) Managerialism and public attitudes towards UK NHS managers. *Journal of Management in Medicine,* 11(4) 214-221.

Magee, H., Davis, L. and Coulter, A. (2003) Public views on healthcare performance indicators and patient choice. *Journal of the Royal Society of Medicine,* 96(7) 338.

Maidstone, R. (2012) Discrete event simulation, system dynamics and agent based simulation: Discussion and comparison. *System,* 1-6.

Mant, J. (2001) Process versus outcome indicators in the assessment of quality of health care. *International Journal for Quality in Health Care,* 13(6).

Maruta, R. (2012) Maximizing knowledge work productivity: A time constrained and activity visualized PDCA cycle. *Knowledge and Process Management,* 19(4) 203-214.

Mauboussin, M.J. (2012) The true measures of success. *Harvard Business Review,* 90(10) 46-56.

Mazzocato, P., Holden, R.J., Brommels, M., Aronsson, H., Backman, U., Elg, M. and Thor, J. (2012) How does lean work in emergency care? A case study of a lean-inspired intervention at the astrid lindgren children's hospital, stockholm, sweden. *BMC Health Services Research,* 12 28-6963-12-28.

Micheli, P. and Neely, A. (2010) Performance measurement in the public sector in england: Searching for the golden thread. *Public Administration Review,* 70(4) 591-601.

Milstein, B., Homer, J. and Hirsch, G. (2010) Analyzing national health reform strategies with a dynamic simulation model. *American Journal of Public Health,* 100(5) 811-819.

Miltenburg, J. (2007) Level schedules for mixed-model JIT production lines: Characteristics of the largest instances that can be solved optimally. *International Journal of Production Research,* 45(16) 3555-3577.

Morgan, D.L. (2007) Paradigms lost and pragmatism regained methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research,* 1(1) 48-76.

Morris, Z.S., Chang, L.R., Dawson, S. and Garside, P. (2006) *Policy futures for UK health.* Radcliffe.

Mulligan, J. and Appleby, J. (2000) Measuring the performance of health systems. *Bmj,* 321(7255) 191-192. Available from http://www.bmj.com/content/321/7255/191.

Ng, D., Vail, G., Thomas, S. and Schmidt, N. (2010) Applying the lean principles of the toyota production system to reduce wait times in the emergency department. *Cjem,* 12(1) 50-57.

Nugus, P., Carroll, K., Hewett, D.G., Short, A., Forero, R. and Braithwaite, J. (2010) Integrated care in the emergency department: A complex adaptive systems perspective. *Social Science & Medicine,* 71(11) 1997-2004.

Office for National Statistics (2012) *Table P04, 2011 Census: Usual resident population by five-year age group, local authorities in England and Wales.* [online]. Available from http://www.ons.gov.uk/ons/datasets-and-tables/index.html?pageSize=50&sortBy=none&sortDirection=none&newquery=usual+reside

nt+population&content-type=Reference+table&content-type=Dataset [Accessed 30/08/2012].

Office of Strategic Health Authorities (2009) *Good Practice in Delivering Emergency Care.* [online] Crown. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_107339 [Accessed 05/07/2011].

O'Regan, D.J. (2006) The NHS: Business and sociological paradigms. *Clinician in Management,* 14(3) 123-128.

Parunak, H.V.D., Savit, R. and Riolo, R.L. (1998) Agent-based modeling vs. equation-based modeling: A case study and users' guide. In: *Multi-Agent Systems and Agent-Based Simulation* Springer, 10-25.

Pollock, A.[.a. and Leys, C. (2005) *NHS plc : the privatisation of our health care.* New [updated] ed. edition. London: Verso.

Porter, S. (2002) Critical realist ethnography. *Qualitative Research in Action,* 53-72.

Powell, E.S., Khare, R.K., Venkatesh, A.K., Van Roo, B.D., Adams, J.G. and Reinhardt, G. (2010) The relationship between inpatient discharge timing and emergency department boarding. *The Journal of Emergency Medicine,* 42(2) 186-196.

Pronovost, P.J., Berenholtz, S.M., Goeschel, C.A., Needham, D.M., Sexton, J.B., Thompson, D.A., Lubomski, L.H., Marsteller, J.A., Makary, M.A. and Hunt, E. (2006) Creating high reliability in health care organizations. *Health Services Research,* 41(4p2) 1599-1617.

Pronovost, P.J. and Lilford, R. (2011) A road map for improving the performance of performance measures. *Health Affairs,* 30(4) 569-573.

Propper, C. and Wilson, D. (2003) The use and usefulness of performance measures in the public sector. *Oxford Review of Economic Policy,* 19(2) 250-267.

Propper, C., Wilson, D. and Burgess, S. (2006) Extending choice in english health care: The implications of the economic evidence. *Journal of Social Policy,* 35(04) 537.

Propper, C., Sutton, M., Whitnall, C. and Windmeijer, F. (2008) Did 'targets and terror' reduce waiting times in england for hospital care? *B.E.Journals of Economic Analysis & Policy: Contributions to Economic Analysis & Policy,* 8(2) 1-25.

Public Inquiry (2013) *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry - Executive summary.* [online] Crown. Available from http://cdn.midstaffspublicinquiry.com/sites/default/files/report/Executive%20summary.pdf [Accessed 2013].

Punch, K.F. (2014) *Introduction to social research: Quantitative and qualitative approaches.* 3rd edition. Sage.

Raine, R. and McIvor, M. (2006) 9 years on: What progress has been made on achieving UK health-care equity. *Lancet,* 368(9546) 1542-1545.

Rees, C. and Gatenby, M. (2014) Critical realism and ethnography.

Richmond, B. (2004) *An Introduction to Systems Thinking.* isee systems.

Saldaña, J. (2013) *The Coding Manual for Qualitative Researchers.* 2nd edition. Sage.

Sandelowski, M. (2000) Focus on research methods combining qualitative and quantitative sampling, data collection, and analysis techniques. *Research in Nursing & Health,* 23 246-255.

Sheps, M.C. (1955) Approaches to the quality of hospital care. *Public Health Reports,* 70(9) 877-886.

Shook, J. (2008) *Managing to learn : using the A3 management process to solve problems, gain agreement, mentor and lead.* Version 1.1. edition. Cambridge, MA: Lean Enterprise Institute.

Silvester, K. (2006) Why do we have a waiting list? *Journal of One Day Surgery,* 18(4) 101-102.

Silvester, K., Lendon, R., Bevan, H., Steyn, R. and Walley, P. (2004) Reducing waiting times in the NHS: Is lack of capacity the problem? *Clinician in Management,* 12(3) 105-109.

Simons, L. and Lathlean, J. (2010) *The research process in nursing.* John Wiley & Sons.

Snape, D. and Spencer, L. (2003) *Qualitative Research Practice: A Guide for Social Science Students and Researchers.* SAGE Publications.

Spiegelhalter, D.J. (2005) Handling over-dispersion of performance indicators. *Quality and Safety in Health Care,* 14(5) 347-351.

Talbot-Smith, A., Pollock, A., Leys, C. and McNally, N. (2006) *The new NHS : a guide.* Abingdon; New York, NY: Routledge.

Tashakkori, A. and Teddlie, C. (1998) *Mixed Methodology: Combining Qualitative and Quantitative Approaches.* SAGE Publications.

Timmermans, S. and Tavory, I. (2012) Theory construction in qualitative research from grounded theory to abductive analysis. *Sociological Theory,* 30(3) 167-186.

Turner, P., Kane, R. and Jackson, C. (2015b) Evaluation of demand in a rural english hospital emergency department. *British Journal of Healthcare Management,* 21(6) 282-288; 7p.

Turner, P., Kane, R. and Jackson, C. (2013a) Creating enterprise efficiencies in the NHS. *British Journal of Healthcare Management,* 19(7) 330-334.

Turner, P., Kane, R. and Jackson, C. (2015a) Combining methods to research an emergency department: A case study. *British Journal of Healthcare Management,* 21(2).

Turner, P., Kane, R. and Jackson, C. (2013b) Enterprise efficiency framework: The english NHS. *British Journal of Healthcare Management,* 19(11) 540-544.

Turner, P., Kane, R. and Jackson, C. (2014) The efficacy of the enterprise culture in the english NHS. *British Journal of Healthcare Management,* 20(3) 109-113.

Turner, P., Kane, R. and Jackson, C. (2015 d) Implementing performance improvement through the enterprise culture. *British Journal of Healthcare Management,* 21(11) 523-527.

Turner, P., Kane, R. and Jackson, C. (2015c) Ensuring capacity meets demand: A case study. *British Journal of Healthcare Management,* 21(9) 428.

Walburg, J. (2006) *'Principles of perfromance management' in Performance development in healthcare : improving patient outcomes: an integrated approach.* London: Routledge.

Wall, A. and Owen, B.G. (2003) *Health policy.* 2nd ed. edition. London ;; New York: Routledge.

Wallace, A. and Taylor-Gooby, P. (2009) New labour and reform of the english NHS: User views and attitudes. *Health Expectations,* 13(2) 208-217.

Walsh, K.D., Crisp, J. and Moss, C. (2011) Psychodynamic perspectives on organizational change and their relevance to transformational practice development. *International Journal of Nursing Practice,* 17(2) 205-212.

Wang, L. (2009) An agent-based simulation for workflow in emergency department. In: *Systems and Information Engineering Design Symposium, 2009. SIEDS'09.* IEEE, 19-23.

Whitehead, M., Hanratty, B. and Popay, J. (2010) NHS reform: Untried remedies for misdiagnosed problems? *Lancet,* 376(9750) 1373-1375.

Wikgren, M. (2005) Critical realism as a philosophy and social theory in information science? *Journal of Documentation,* 61(1) 11-22.

Womack, J. (2011) *Gemba Walks.* Lean Enterprises Inst Inc.

Womack, J.P. and Jones, D.T. (1996) *Lean thinking: banish waste and create wealth in your corporation.* Simon & Schuster.

Womack, J.P., Jones, D.T. and Roos, D. (2007) *The Machine That Changed the World: The Story of Lean Production-- Toyota's Secret Weapon in the Global Car Wars That Is Now Revolutionizing World Industry.* Free Press.

Womack, J.P. (2005) *Going lean in health care.* Institute for healthcare improvement Cambridge, MA.

Worthington, F. (2004) Management, change and culture in the NHS: Rhetoric and reality. *Clinician in Management,* 12(2) 55-67.

Wright, J.S.F. (2009) The regulatory state and the UK labour government's re-regulation of provision in the english national health service. *Regulation & Governance,* 3(4) 334-359.

Yin, R.,K. (2014) *Case study research: design and methods.* 5th edition. Thousand Oaks, California: Sage.